Special Features This Issue
"How to Make a Wooden Propellor"
"29 Days Before the Mast" - "Harbor Cat-10"

messing about in BOATS

Volume 18 - Number 11

October 15, 2000

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BOATS
29 BURLEY ST., WENHAM, MA 01984 (978) 774-0906

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Published twice a month, 24 times a year. U.S. subscription price is $24 for 24 issues. Canadian and overseas subscription price is $36 U.S. funds drawn on a U.S. bank or by international money order.

Address is 29 Burley St., Wenham, MA 01984-1943. Telephone is 978-774-0906. There is no machine.

Editor and Publisher is Bob Hicks.

Production and subscription fulfillment is by Office Support Services.

Looking Ahead...

Robert Rogers tells about his "Big Adventures in a Small Boat"; and Jeff Douthwaite's chronicle begun in this issue, "29 Days Before the Mast" continues with Part 2.

Randall Brubaker describes his solution to a familiar question in "*Big Sky*...Sell Her or Keep Her?"; Robb White regales us with a look back at the 'Sailfish"; Kim Apel concludes his two part discussion "Flood & Ebb Tides in Small Boat History"; My chronicle of the fortunes of two trans-Atlantic rowing race contenders begins in "Team USA 2001"; and I also hope to bring you the story of a friend's impressive project in "Dan's Tri".

Bruce Armstrong introduces us to "Renn's Alaskan Workhorse: The Tolman Skiff"; Curt Chambers updates us on his pedal powered "Escapade Project"; Jon and Rick Persson present their "Atlantic 17 Open Water Rowing Boat"; I still want to get out in "The Ozone Hyper 1" pedalpower boat (the delay is all on my part); and Phil Bolger & Friends bring us Part II of "Double Eagle 657".

On the Cover...

Shamus Doneagain under sail in his homeport of Buffalo, New York, in the Upper Deck Harbor Cat 10 he built to show off at the WoodenBoat Show. GregGrundtisch tells us all about this adventure/project in this issue.

Commentary...

Bob Hicks, Editor

Over the 17 plus years we have been turning out this little magazine every two weeks, our travels to attend small craft gatherings or visit people doing something newsworthy in small craft have been slowly contracting in range. In those first few years, as we endeavored to build up the business so it would support our modest life style, we went all over New England to gather news; Lake Champlain in the northwest, the Maine coast in the northeast, Cape Cod and the Islands in the southeast, and the Connecticut shore of Long Island Sound in the southwest.

We travelled south to St. Michaels, Maryland several times, despite intense dislike of travelling around New York City and down that Jersey Pike, to the small craft events at the Chesapeake Bay Maritime Museum, and likewise forayed westward over the endless New York Thruway to Clayton, New York in the Thousand Islands area of the St Lawrence River to Antique Boat Museum events.

But, that was then, and this is now, "this" being that we pretty much stay to home it seems. I tend to blame this growing reluctance to hit the road to my advancing years. I have no health problems to hold me back, I think it is some sort of growing emotional preference to just stay around here. I jokingly tell those who ask me to travel to some event or other, undeniably interesting events though they may be, that I find a day's round trip about all I really feel enthused about. We do not fly, it costs too much as a whole package, including car rental and overnight accomodations (we did our overnight travels in our 1982 Ford travel van, which now sits idle down back of the barn). With the only option being driving, and with my growing distaste for "getting there" over endless boring Interstates, we seem to have come to this pass.

This stay at home attitude could lead to growing provincialism in coverage of messing about in boats on our pages. Fortunately, many of you have filled this potential void with your reports on what is happening all over the country. You have indulged my penchant for not going anywhere, for which we all thank you, as there is much to hear about from all over.

As this millenium year draws to a close I realize just how close we've stuck to home. Our furthest foray this year was the two hour drive to Mystic, Connecticut for the WoodenBoat Show. We did the daily round trip three times, preferring the "commute" to paying the grossly inflated overnight accomodation prices stimulated by the nearby gambling joint run by the local Indian tribe.

In 1999 we did the ten hour drive to the Show at St. Michaels. We enjoyed a wonderful stay while there with old friends not far away, but on the Monday morning at 6am, facing the ten hour drive home past greater downtown New York City, I thought to myself, "why am I doing this?"

Living where we do on the Massachusetts north shore about 20 miles northeast of Boston, we are within easy reach of much small craft activity. This provides me with handy opportunity to go out and gather news without the burden of long distance travel. As a recent example, I stirred myself to drive 18 miles to Gloucester in July to bring you coverage of the Blackburn Challenge, nice to have all those folks bring all their interesting small boats to my neighborhood and put on so impressive a show.

At that event I learned more about what I had been hearing of the ambitions of a local stalwart small craft competitor to participate in a rowing race across the Atlantic in 2001. I found that Tom Mailhot was currently building the boat he and his partner John Zeigler would use right over at the Essex Shipbuilding Musuem, 11 miles from here. Wonderful, we went over to see what was going on just before this issue went to press, and the result of this initial visit is that I propose to start an ongoing chronicle of the fortunes of the USA's only team entered (amongst 50) in the 3,000 mile, 60 days, more or less, rowing race from the Canary Islands to Barbados in the West Indies in October 2001. I'll be hanging around this venture for almost a year.

Then there's the 34' trimaran built, and just launched, by a bike riding friend in Newburyport, 16 miles away, at which affair I met some young men building a 48' "cattlemaran" intended for local tour boat use next year. There's the October outings on the Essex Shipbuilding Museum's Chebacco boat, the *Lewis H. Story*, perhaps a nice late fall two hour cruise on lovely Essex Bay would be newsworthy.

It's easy to succumb to local enchantments, there are more than enough of them, but still, when I contemplate potential longer travels to really interesting gatherings of small boat folks with reluctance to endure the necessary "getting there", I try to persuade myself to go for it, to not give in to the blandishments of local convenience. Once I didn't need persuasion, I could hardly wait to go. Is this another aspect of lost youth manifesting itself?

Small Boat SAFETY

Tom Shaw

Vessel Safety Checks

It has rained steadily for the past three days. On day three, since there was no sense in going out to the boat ramps to do vessel safety checks, I went through my records of the almost 600 boats I have examined this year, concentrating on those vessels to whom I could not give a Seal of Safety decal. There were three main reasons

By far the greatest number of boats that did not meet federal requirements failed because of improper registration numbering. Most common was incorrect spacing. In this state, and in most others, registration means two letters to identify the state, then a space, then four numbers, another space, and two letters. My boat is NC 3551 CC and I like to say that the CC stands for cautious captain. When there is no spacing, letters and numbers tend to blur together as I have learned when the Coast Guard has sent me looking for a lost vessel. I return from those patrols with a blinding headache from trying to read registration numbers through binoculars from a bouncing platform. The spacing makes all the difference.

"But that's the way it was when I bought it", the skipper invariably says and I try to explain that since it is now his boat he is responsible for getting things right.

A second common deficiency is boats with numbers only on the starboard side. This can be partly explained by the language of the North Carolina tax sticker which goes on the starboard side. It does not say number on starboard only, but the implication is there. Some of the boats with this deficiency are brand new, which raises an interesting question of dealer responsibility.

And finally, there are boats with proper state identification, proper spacing, but only three numbers instead of four. A check of the registration certificate reveals that the boat is not NC 313 AM but either NC 0313 AM or NC 3130 AM. That's like saying my last name is Haw or Sha rather than Shaw.

The moral of all this is number her right for safety's sake.

The second most common cause for boats failing to receive the safety decal is flares: Either there are none aboard, or they are out of date (the record this year's flares that expired in 1987) or they are soaking wet and useless. Granted that most of us, thank goodness, will never need to use our flares, common safety sense demands we have them in good working order.

And finally, navigation lights, especially the plug-in 360 degree white lights on so many of the smaller boats. I carry a can of WD 40 with me when I do vessel safety checks and quite often can get those white lights operating again. "But I never go out at night," skippers say, and I respond, "What about afternoon thunderstorms or early morning fog when you are going fishing? Give other boats a chance to see you and to know your course by the lights that are visible. Spray the sockets and into the wand every time you think about it. Ideally, check the lights every time you go out."

And I invite them to go down to the Coast Guard Station of a morning and watch the duty section check every safety item on the 47 footer, the 41 and the RHIB just as I check my little 18 footer each time I go on patrol.

There is no such thing as being too careful.

Plastics: Good News And Bad

For better or worse, we live in an age of plastics which, on land, can be a nuisance but in the water is extremely damaging to the environment.

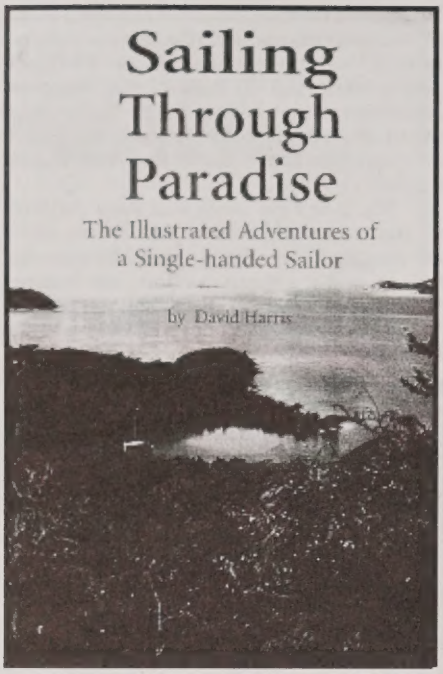
The good news is that there is, or at least seems to be, far less plastics floating about in our waterways than just a few years ago. I carry a long-handled net on my boat just to scoop out trash and it is rare these days that I have to use it. Most of what I do find is near public boat ramps where, unfortunately, fishermen and boaters seem to be far less considerate. At two ramps I regular visit for Vessel Safety Checks, I spend a good bit of my time picking up trash left behind by inconsiderate folk, hoping to catch and bag it before it blows into the water. Interestingly, one of these ramps has public trash barrels and the other has none. The quantity I pick up is approximately the same at both places. Does that tell us something?

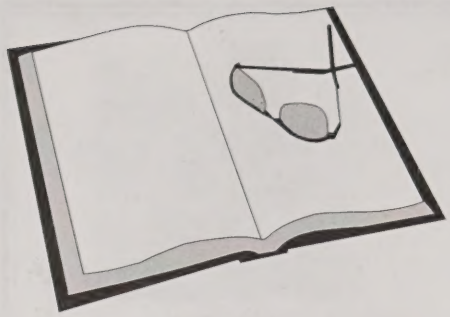
A second bit of good news about plastics is that zip-lock bags will keep essential equipment such as flares dry on the small boats that most of us operate, yet it's astonishing how many boats fail to receive the Seal of Safety because the flares, though within date, were unprotected and were waterlogged and useless.,

Everyone can add more good news items to the list. There is no question that plastics have made boating much easier and more fun. But there is some bad news too.

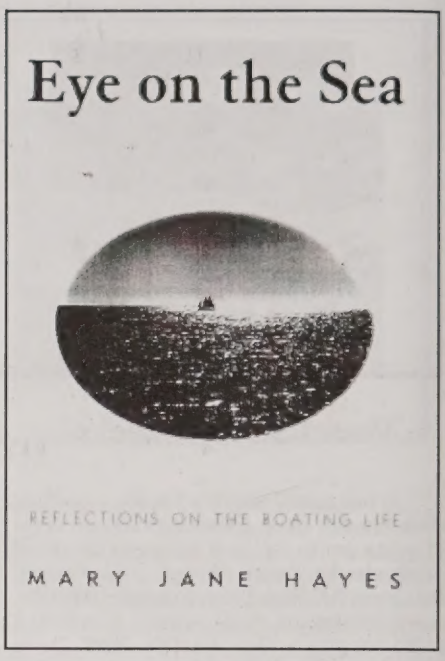
All too often, as I do Vessel Safety Checks, I find the required number of life jackets on board, but still wrapped in the original plastic bags as they came from the store. In an emergency, the time needed to tear open those plastic wrappers and undo the store-neat alignment of the straps could be critical. I will not give a safety seal till those plastic wrappers are removed and I have talked to the boat owner about adjusting a life jacket to fit each member of the family and then marking it with a name.

P.S. It is a joy to see that most children we pass when on Auxiliary patrols these days are wearing PFDs. That was not true a decade ago, so public education efforts are bearing fruit. We even see an increasing number of adults who, boating alone, will wear a PFD. For me, I won't leave the dock without one.





Book Reviews



Sailing Through Paradise
The Illustrated Adventures of a Single-Handed Sailor

By David Harris
6"x 9" Paperback, $24.95
Tortuga Books (1999), Florida,
(800) 345-6665

Reviewed by Jim Lacey

Sailing Through Paradise by David Harris and *Eye on the Sea* by Mary Jane Hayes are very different but complementary accounts of adventures in sailing. Harris tells the story of his two-month solo passage from the Florida Keys to the Virgin Islands and back in a 32' catamaran; Hayes, in a number of brief essays, poetically recalls the sights and sounds, the delights and dangers of the sea as experienced over the years on both sail and power boats with her husband at the helm. These books bring to mind the motives of the single-handed sailor and the role of the enthusiastic or reluctant mate.

Since the days of John MacGregor and Joshua Slocum, sailors have made remarkable single-handed passages to gain celebrity, make a point, set a record, or turn a trick by publishing accounts of their experiences. Whatever their motives, they exemplify a venturesome spirit shared to some extent by the weekend solo sailor in local waters who avidly reads *Messing About in Boats*.

Because his straightforward story focuses on details of the passage, much of what we discover about David Harris himself is by inference. The reader learns that he is a relatively well off man in his fifties, who has escaped for the time being from a series of jobs that tied him to a desk. He was able to purchase a PDQ-32 in Canada and to pay a professional captain to sail it with him back to the States. We learn that he has a wife and a 12-year-old son, who joined him for part of the maiden voyage of *Top Cap*, once the professional captain had taken Harris as far as Annapolis. He is able to absorb the considerable cost of the trip's expenses, as well as a $1,200 outboard repair bill, apparently without pain.

Harris is clearly in very good physical condition, for he always dives on his anchor, is ever on the lookout for a beach firm enough to run on, and he manages the precarious task of shifting one of his two 55 pound Nissan outboards onto his inflatable without difficulty. Off Nassau he had to dive repeatedly to retrieve an anchor and an even heavier chain that became fouled in an automobile frame sunk in more than 20' of water, a task that many men half his age would find daunting.

Top Cat is very well equipped for the voyage. In addition to supplies that lowered her waterline some four inches, the catamaran sports an idiosyncratic autopilot, which Harris dubs "Otto", a Garmin 75 GPS, a Garmin 45 GPS as a backup, and a single sideband receiver to supplement his VHF radio. Harris knows enough about this equipment to repair his autopilot and to understand precisely what is happening when the GPS goes wacky.

Throughout *Sailing Through Paradise* it becomes clear that Harris is competent and knowledgeable when it comes to matters of navigation, anchoring, planning departures and arrivals, and monitoring his requirements for food, gas, and the like. Though he describes adverse conditions and setbacks, such as a 4-1/2 inch cut on his arm resulting from a fall on deck and requiring 19 stitches, Harris makes the voyage seem easy. Except for a few extended passages, he spent every night at anchor with a leisurely drink before dinner.

Much of the book is concerned with details of the passage itself. One very welcome feature is the simplified, full-page color charts of the voyage, which begin the book and each of its chapters, so that the reader can locate precisely the islands, towns, cays, coves, and harbors that Harris passes through or briefly visits. In addition, the book is handsomely illustrated with the excellent photos Harris took, all of them clearly related to the text. Among memorable adventures is the attempt to locate a post office in Ponce and the mysterious journey through mangroves and across a creek to find an immigration official's office in Luperon, clearly visible because of a towering antenna, but, like Kafka's castle, almost impossible to get to.

When Harris' wife arrives at Charlotte Amalie airport to stay with him for a month of sailing through the Virgin Islands on short, easy passages, there is an ellipsis in the book.

Eye on the Sea:
Reflections of the Boating Life

By Mary Jane Hayes,
5"x 8" Hardcover, $22.00
Breakaway Books (1999), New York
(800) 548-4348

Reviewed by Jim Lacey

The reader gathers that his wife enjoys a modest amount of cruising but that she is not eager to join him on an extended voyage. The wives of my boat-nut friends tend to be less ardent than the skippers when it comes to messing about in boats. Often, while the guy wants simply to sail, the woman would much rather explore the harbor or the beach, or even just relax while riding at anchor.

Mary Jane Hayes' *Eye on the Sea* sensitively and lyrically portrays the joy, the pleasures, the exhilaration, as well as some of the discomforts of the boating experience. It is a great book to buy for any reluctant sailor, wife, husband, or significant other.

Hayes is a professional writer and photographer, whose work has appeared in a variety of boating magazines, including *Cruising World*, *Boating Offshore*, *Sail*, *Coastal Cruising*, and *Main Life*. Topics covered in *Eye on the Sea* include the various seasons of the year, harbors and coves, mostly of New England, nostalgically recollected, reminiscences of a variety of passages, frequently in waters off Massachusetts and Maine, and images of sun and fog on the water, boats and seascapes, and the ever-changing water, with its shoals and whitecaps, navigation markers, and the "confetti" of lobster pot buoys. Each of the book's 33 chapters offers its share of memorable images, thoughtful comments on the sailing experience, and an interesting assortment of stories and anecdotes.

Only one of Hayes' photographs is included, unfortunately. On the cover and beginning each chapter is an oval cut of a sea dazzlingly aglitter with a seemingly tiny ketch in the offing splitting the horizon. More of her photos would have been welcome.

You write to us about...

Adventures & Experiences...

You Can't Have Too Many Boats

"You can't have too many boats," I have always been fond of saying. But then there came a day when I found myself deliberating whether to go out for a sail on *Harold*, the 19' O'Day, six miles away at bay side Naskeag; or *Sojourner*, the 22' cruising sloop moored nearby just off the tamer waters of Eggemoggin Reach; or drive 12 miles in the other direction and take *Marisol*, our 14' Cape Dory, for a sailing spin on the lake-like waters of Smith Cove. Unable to decide, I stayed home and mowed the lawn.

Each boat had been an opportunity, a bargain not to be missed. And they didn't sit idle most of the time. I rented them out. In fact, *Marisol* had been purchased so that when *Buttercup*, our 22' cruising catboat, was sold we would have something to sail around in, *Harold* being almost continuously on charter. But then *Sojourner* came along, too good to resist, and for a while we had four sailboats. So we chartered out *Sojourner*, and when *Buttercup* was gone we were back to needing *Marisol* for times when both *Harold* and *Sojourner* were out.

I never imagined that anyone could own too many boats. In fact, my dream had always been to have just the sort of three-ocean Navy that we had now. But if we rented them out we didn't have them, did we? We were boatless, in fact; undone by our own success.

In August they were almost always rented. And it was in August that our daughter, Michele, was here with her family, who loved to sail. Our two sons lived nearby, but they were usually too busy to sail. Now that we lived in Maine, we were all too busy most of the time. Something was always coming up, like the lawn.

So sell them. Get back to only one. Which one? *Harold*, of course. *Harold* was not only a good day sailer, but had a tiny cabin. I had cruised three days on it by myself some 10 years ago. We could even trailer it, if we wanted to. *Harold* was also virtually maintenance-free. We hauled it up on rollers with pulleys ourselves, and the only thing we had to do to it each year was paint its bottom.

"You sold *Sojourner*?" asked Michelle, who had come a week early. I tried to explain, but it wasn't much good. *Marisol* was gone, too, as was *Harold*, for the next five days, to a former renter who would be so disappointed....

"We could go canoeing," I suggested. We were driving around, looking at sailboats. All of Maine was out on the water, it seemed. All but us.

"Poppy, there's a boat, called out Katie, my five-year-old granddaughter. I stopped. It was a 19' O'Day, *Harold's* twin, named *Martha*. *Harold* and *Martha*. They would make a nice pair. "How much?" I asked. The owners were giving her away. "We'll take her," I said.

No, I wasn't getting into it all over again. You can have too many boats. "One and a backup," I said to myself. Think of *Martha* as the spare.

Clinton W. Trowbridge, Sedgwick, ME

Information Please...

Geared Pedal Drive

I'm very into pedal drives and do like your recent articles about them.

Twice on TV I have seen a pedal drive in pedal/racing competition that I have been unable to locate in my research so far. It has an open gear drive, somewhat like in the rear axle of a car, but with the big ring gear on the pedal crank driving the smaller pinion gear connected to the prop shaft. No chains, no belts, no oil, very reliable, simple.

Does anyone know who makes this type of drive?

Fred Bovio, P.O. Box 356, Christiansted, VI 00821-0356

This Magazine...

Where Else?

Thanks for a great magazine. Where else would I see an article about Leo Pezzack (June 15 issue) from my old stomping grounds in West Cornwall. Leo and I were old buddies from way back.

Russell Greenslade, P.O. Box 284, Girard, OH

Useful Information...

Useful Information...

DIY Sailmaking/Maintenance

Sailrite Enterprises Inc. has produced seven new interactive videos on CD-Rom for the sailing market. The CDs are recommended for use with Windows operating systems and computers 200 mhz or faster. They are interactive, i.e., menu driven so that you can go directly to the specific topic you wish to view. The videos are also available on VHS tape which are viewed serially.

Topics covered in each video are as follows:

Learn Sail Maintenance Volume I
- Repair Tears & Holes
- Boltrope Sleeve Repair
- Leechline Replacement
- Creating a Sail Window
- Installing Reef Points
- Batten Pocket Repair

Learn Sail Maintenance Volume II
- Restitching a Sail
- Replacing Slides, Slugs, Jibsnaps
- Removing & Installing Numbers
- Fixing Flutters & Hooks
- Adding a Tell Tail Window
- Hand Stitching
- Clew Repair

Making A Boat Cover
- Measuring
- Creating a "Fabric Blank"
- Fitting: Darts, zippers, openings, chafe protection
- Securing: Support, fasteners, closures

Building & Using A Cruising Spinnaker
- Layout Panels
- Baste Hems
- Sewing Tips
- Patches
- Stays and Corners
- Launching Bag
- Using the Sail

Building & Using A Spinnaker Sock
- Introduction
- Sewing the Sock
- Sleeve Fabrication
- Hardware Installation
- Running the Lines
- Using the Sock

Make Your Own Boat Cushions
- Foam Basics
- Measuring and Cutting Foam
- Panel Generation: Plates & boxing
- Assembly Techniques: Welting, zippers
- Inserting Foam

Installing A CDI Furler & Modifying Headsails For It
- Cut Extrusion to Length
- Assemble CDI Furler
- Install Deck Hardware
- Modify Sail Luff
- Install Sacrificial Cover
- A Simple Sleeve Cover

The CD-Roms are priced at$9.95, the VHS tapes at $15.95

Sailrite Enterprises Inc. 305 W. Van Buren St., Columbia City, IN 46725, (219) 244-6715, tollfree (800) 348-2769, <sailrite@sailrite.com>, www.sailrite. com

Newsletter Notes from All Over

A compendium of selections from newsletters and magazines we receive which, we believe, illustrates what is going on out there in the world small boats.

Steamboat Bill
To Record, Preserve & Disseminate the History Of Engined Powered Vessels Steamship Historical Society Of America

Pilot House

Greetings to you with this, the first issue of 2000 (Vol. 57 No. 1, Spring 2000. Ed.) In this edition of *Steamboat Bill*, we have the opportunity to look back on the careers of two great seamen, Captain Edward C. March and Commodore Leroy Alexanderson.

Originally intended as a personal memoir for his family so they could see ""what the old man did when he was young," Capt. March penned "Life in *Marsodak*," sometime around 1980. After the manuscript rested in a personal file cabinet for almost twenty years, Capt. March generously offered to share it with *Steamboat Bill*. The story is an absolutely wonderful first-person chronicle of two years' experience aboard a typical 1930s American bulk freight steamer.

While March would go on to berths in other vessels and, eventually, rise "through the hawsepipe" to his own commands, the fondness that he feels for that unassuming vessel called *Marsodak* is unmistakable. Although she met an untimely violent end in time of war, *Marsodak* sails on in his memories, and after reading this issue, hopefully yours.

In contrast is the storied career of Commodore Leroy Alexanderson, who rose through the ranks in an entirely different fashion, to the eventual command of perhaps the greatest vessel ever to fly the American flag: *SS United States*.

From a start in the New York Nautical School to United States Lines and service in World War II in between, Alexanderson had an amazing career

The dawn of a new century and a new millennium are upon us and the improvements of technology have all but relegated the sailing experiences of men like Capt. March and Commodore Alexanderson to history. And it is that history that we should move quickly to preserve, before those remarkable stories and experiences are lost to the ages.

All it takes is a notepad or a tape recorder and a friendly visit to preserve the history of great ships, from the staunch little *Marsodak* to the mighty *United States*, and the history of great men, great sailors, like Capt. March and Commodore Alexanderson.

In the upcoming summer issue of *Steamboat Bill*, readers can look forward to an article on the steamers of the Central Vermont Railway.

Steamship Historical Society of America, Inc., 300 Ray Dr. Suite 4, Providence, RI 02906

Newsletter of the Friends of the North Carolina Maritime Museum TSCA Chapter

A Summons to The 8th Annual TSCA "Fall in the Water" Meet

Hear me you unruly Traditional Small Crafters. It is time for you to gather for the 8th annual TSCA "Fall in the Water" Meet. It is time to get together with others of your ilk to renew old friendships. It is time to reacquaint yourselves with a thing that gives joy and meaning to your lives, namely the act of messing about in small boats with friends and family. Listen to me as you have never listened to me in the past (and you never have) because I say to you that there is no excuse for not being present. Be not distracted from the path to Jim Brode's domain on Saturday September 16. Bring children of all ages and your kids too. (There will be large sharks!)

The Brode residence has not moved and is still on Pearson Circle just off Highway 24 near the Osprey Oaks Marina at Broad Creek. Come early on Saturday and stay so late that you have to join those of us who will camp out on the soft grass of the Brode back yard. You are on your own for lunch but bring a potluck "something" for dinner. Over the past few years the potluck has turned out some really remarkable fare and we hope you will try to outdo yourselves again this year.

For those of you who haven't been to the "Fall in the Water" before, and who don't have a boat, this a great chance to go for a sail. Any owner who brings a boat does so with the full expectation that you will take it for a sail. If you are not confident in your own abilities with a particular rig, and want to try a boat out, this is your event because everyone who brings a boat does so for the chance to get other folks to go for a sail with them. See? That is what TSCA is all about.You have no excuse not to come!

As for those of you who have a boat, this is an "in the water" meet and we expect you will want to bring it for this event. (That's right. Get your lazy butt out there and start getting it ready, now! No excuses!) Bring at least one anchor, a long mooring line, fenders, and the rest of the gear required for safe and seamanlike operation of your boat. Bring a flashlight if you intend to join us for the lovely third annual Ellen Barton sunset sail. You shouldn't miss the sail or the bonfire that welcomes us back to shore. If you decide to join the campers, plan to be around for the traditional Brode breakfast on Sunday morning.

Finally, it has become a traditional event to sail boats back to Beaufort on Sunday and if you can make it please come. The trip is almost always a broad reach (the most comfortable and fastest point of sail) up Bogue Sound and there's plenty of room aboard the boats for anyone who wants to come along. We usually get in by 5pm at the latest (I'll bet I've just condemned us to a wild beat until late into the night!)

Friends of the North Carolina Maritime Museum TSCA, 315 Front St., Beaufort, NC 28516.

Mains'l Haul
A Journal of Pacific Maritime History Maritime Museum Association of San Diego

From the Helm

She was the first thing they saw. Sometimes coming out of the fog or the rain, other times at night, the only vessel at sea with whom a close approach was welcome and a collision eagerly anticipated. She meant the end of a voyage and the transfer of cargo; perhaps a night on the town or simply a whole night's sleep; respite from the sea, or only a brief turnaround and then back out again. She was the link to the lights, the tugs, the customhouse brokers, the longshoremen, the wharfingers, the telephones, the eating establishments, the bars, the streets, and all the other things that made a sailortown.

That, at least, is what she was to those who stood on a ship's bridge or deck scanning the horizon, waiting for her to appear. She was the first tangible encounter with the seaport and she served in that role longer, we believe, than any similar working watercraft now in existence. To those who knew her with an everyday familiarity, she was just another workboat, prettier than most, but hardly worth a second glance as she went about her business. Her name is *Pilot*.

Between 1914 and 1996, most of the commercial ships that entered or departed San Diego Bay did so with the assistance of this unassuming little vessel. Of all the objects we possess as a community, perhaps none so closely or so durably relates to the story of our economic development. If, in other words, you desire to put your hand on the one thing, that speaks most clearly of San Diego's crucial link with the sea and its consequent rise as a great urban center, then you need to go to B Street Pier where *Pilot* is undergoing a slow and painstaking rebirth. If you do visit (and I encourage you to do so), take your time and listen closely to the whispers that haunt that cavernous space, for they convey a multitude of stories.

As it happens, a few of those tales also emerge here in the pages of *Mains'l Haul* (Vol. 36, Nos. 2 & 3, Spring/Summer 2000. Ed.). There are stories of other work boats as well:

Fireboats, ferries, and even garbage scows. All of these vessels are rather prosaic, and none would have been anticipated in its own time as ever becoming "historic". Consequently, none were thought worth saving before *Pilot*, which somehow survived long enough to acquire a degree of notoriety for her age alone, and ultimately a dawning public appreciation of her historical significance. The latter, as you will see, came none too soon.

We have a kind of cultural myopia when it comes to predicting the significance of the objects which surround us in our own time or the near past. With a bit of understandable arrogance, we prefer to see ourselves reflected in the large, the extravagant, and the remarkable, forgetting that from a distance across time these are the least representative of our real lives and illustrate little of the everyday experience that our descendants would find compelling.

Star of India, for instance, was one of our nation's first large scale preservation projects that reflected the lives of ordinary people, but early in her museum career she went into decline and came near to destruction mostly because the story of her life seemed to encompass nothing especially noteworthy. She was a rather ordinary square rigger that endured sufficiently long to seem just curious and romantic enough not to throw away. Yet today, she is regarded internationally as one of the great maritime treasures of the world, and the fact that she is representative of typical ships of her day is one of her most important historical assets.

The myopia of significance has been a longstanding affliction and explains, for instance, why it has been fairly easy to stock restored plantation homes with exquisite original furnishings but virtually impossible to do so for replicated slave cabins. No one thought the material culture of such people worthy of note or of preservation, and in consequence it has now become rare and priceless.

Maritime history is no different. Future generations of Americans will have the mixed blessing of caring for as many as eight aircraft carriers and eight battleships, one of the largest ocean liners ever built, and a large nuclear powered merchant ship, all as aging museum vessels. Yet the fireboat *Hoga*, with a long and distinguished career as a San Francisco Bay workboat and the last surviving vessel that fought at Pearl Harbor on December 7, 1941, will probably be lost because our current understandings of significance for her period have yet to outgrow our conventional infatuation with the monumental.

We can't save everything of course, so we have to make hard decisions about what to keep and what to let go. As we do, it is perhaps well to remember what every historian is supposed to know: It is in the links between the seemingly mundane details of everyday life and the larger currents of history that the story of an entire era takes form, like the low white silhouette of *Pilot* emerging from the fog.

Maritime Museum Association of San Diego, 1306 N. Harbor Dr., San Diego, CA 92101, (619) 234-9153, <editor@sdmaritime.com>

Waterlines
Newsletter of The North Carolina Maritime Museum

Staff Participates In International Boat Show

In July, Curator of Boatbuilding Technology Roger Allen and Technician William Prentice flew to France where they took part in International Wooden Boat Shows in Brest and Douarnenez. *Malea*, a 21' spritsail skiff built in 1954 by Julian Guthrie of Harkers Island, had been shipped earlier via the port of Baltimore aboard a container ship. *Malea*, part of the museum's traditional small craft collection, represented the state of North Carolina.

This was the first time that the United States had taken part in the renowned International Wooden Boat Shows, held on the northern coast of France since 1986. Seven other boats from across the U.S. participated and were shipped along with *Malea*. The Museum Small Craft Association, a nationwide organization representing maritime museums and interests, funded the transport of the boats.

William Prentice reports that well over 3,000 vessels from around the world were on hand for the five-day wooden boat show in Douarnenez. "Ranging in size from small sailing dinghies to tall ships the show was a feast of wooden boats. Boats were moored and docked around two miles of the scenic harbor. Attendance was over 300,000 during each day of the event."

North Carolina Maritime Museum, Harvey W. Smith Watercraft Center, 315 Front St., Beaufort, NC 28516, (919) 728-7317.

Schooner News
Newsletter of the Wisconsin Lake Schooner Education Association

The S/V *Denis Sullivan* Has Been Launched!

The Launch of the Century took place in late June, 2000! The 300,000lb *S/ V Denis Sullivan* was launched in the early evening on Thursday, June 22, 2000. The complex procedure had been postponed for almost a week due to inclement weather. Due, also, to the complexity of this launch, the public watched from the UWM Great Lakes Water Institute, which is across the river from the Port dock.

Prior to the launching, the *S/V Denis Sullivan* was moved onto a barge from her construction site and towed over to the heavy lift dock on Jones Island where she was placed in straps and prepared for launching with the Port of Milwaukee crane. She was then lifted and set gracefully into Lake Michigan where she laid in straps overnight and was thoroughly checked. The hull swelled quickly and was able to be towed back to her dock at Wisconsin Lake Schooner Education Association the very next day.

Here the *S/V Denis Sullivan's* masts will be stepped, her rigging put in place, the interior finished, and she will undergo sea trials.

This traditional, 137' Great Lakes schooner is the first one to be built in the state in over a century. Under construction since 1996, this launching marks the culmination of efforts of over 400 volunteers, community collaborators, our generous donors, and WLSEA's dedicated staff and board of directors. When complete, the *Denis Sullivan* will be used as a dynamic educational tool, passenger vessel, and a goodwill ambassador for the state of Wisconsin.

Below deck, the ship will be equipped with an on-board laboratory for research, state-of-the-art communication equipment, and a progressive navigation station.

The *S/V Denis Sullivan* will also be available to the public as a cruise vessel. Three-hour cruises out of Milwaukee are planned along with available dockside receptions. She will winter this year in Florida and the Bahamas where educational and exciting holiday cruises will be offered.

Wisconsin Lake Schooner Education Association, 500 N. Harbor Dr., Milwaukee, WI 53202, (414) 276-7700.

Water Wandering In Denmark

By Richard C. Newick

Denmark in mid-August is a pleasant place in which to make the most of a northern summer's long mild days. The almost fresh waters are used to the utmost by descendants of the sea roving Vikings who keep alive a great nautical heritage. The low farming countryside does not obstruct the steady winds and sandy shores provide fine shelter and hospitable harbors. Naestved, in southern Sjaelland, is where the kayak *Friend* and I were landed by the small Dutch motor ship Rijnborg whose English speaking skipper kindly helped me purchase charts, a phrase book and a Danish/English dictionary.

Before starting to Copenhagen, I spent two days paddling along the inviting shoreline while a persistent head wind encouraged the idea of acquiring a small double ender which would be more at home than a kayak in those boisterous waters. The thought soon ran away with me and it was exciting to dream of building a small cuddy forward and cruising Scandinavia until the weather indicated a southerly course, then heading through the canals to enjoy a mild Mediterranean winter. Only one item was lacking, a small double ender with both sail and power.

Arriving in Vordingborg's ancient harbor late in the afternoon, I was met at the club by half a dozen Optimist prams, handy little eight footers whose design originated in Florida. Their young crews eagerly took care of the *Friend* while Erick Knudson invited me aboard a large motor yacht he was skippering. We found a great deal in common. After I spent the night at the youth hostel we explored the fishing harbor for my new dream boat which Erick thought might be found for about $400.

There seemed to be nothing available, but when talking to Vilhelm Rasmussen, the local boat builder, we discovered that his personal boat, an eighteen foot Helsingor Jolle, designed by Aage Utzon, was for sale. While eating lunch with Erick studied her tall rig, clinker hull and small mahogany cabin through binoculars. Even then she was sold. Erick said that the price of $575 was very fair, but later I was told that it was quite high. In any event my values were influenced by what she would bring in San Francisco, certainly more than double that figure.

Inspection showed everything nicely done, with no unnecessary gadgets. Two canvas berths extended into the cockpit which was large enough for a day party of four and could be covered by canvas to form an extension of the cabin. Cooking was done on a portable single burner Primus and a bucket served as toilet. I was impressed with her windward ability despite her shallow thirty inch draft. with a beam of six feet, 160 square feet of sail, and one ton displacement, her able designer had captured the character of the old fishermen and at the same time improved her performance. As for changes, I planned on getting an outboard motor to take her south through the canals and perhaps make an old fashioned sprit rig with easily stowed short spars. The name of *Amiga* seemed suitable.

It was arranged that the *Friend* would be stored at the Rasmussen and Egholm boatyard and that I would live aboard *Amiga* while the transfer of title was being arranged. I slept poorly the first two nights, but only because of the exciting cruising possibilities presented by my new floating home. Most of my meals were taken with the hospitable Rasmussen family where I slowly picked up a few words of Danish and Vilhelm quickly enlarged his small English vocabulary.

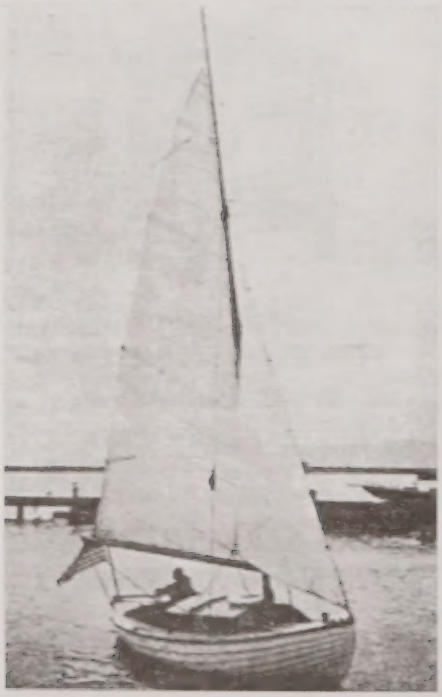
Late in August all was ready for departure to Copenhagen. Vilhelm's brother Ruben went along on the two day trip and I was glad to have his company. The first day's run was through narrow passages where well tilled farms and short stretches of forest came to the edge of almost tideless water. White houses along the cliffs marked the small harbor of Rodvig where we arrived in midafternoon. Because it was a municipally owned harbor we had to pay a fee of thirty cents. In contrast most of the larger Danish harbors were built with government funds and are free to pleasure craft.

Our evening meal was typical of my fare while cruising in *Amiga*: Creamy milk to drink, a main course of stew or soup, which ended as a tasty combination christened stoup, with fresh fruit for dessert. This was nourishing and inexpensive, easy to prepare in the cockpit while surveying a new harbor in the early evening light. When I was alone at sea in a typical Danish breeze the boat required too much attention to permit cooking so sandwiches made of substantial Danish rye bread sufficed.

The trip from Rodvig to Kobenhavn (as Rubin taught me to say instead of Copenhagen) was made unusual by fog and calm for several hours. Landsman Ruben worried about what I was sure was only a temporary situation so I let him row until his anxiety melted into fatigue. Late in the afternoon a breeze cleared the air and we were soon scudding along between the island of Amaga and the city, where we were delayed by two bridges that only opened for commercial craft.

Dusk found us in the old Lystbaadhavn, a park lined yacht basin only a few minutes from the downtown area. The guest moorings were taken by several large plush yachts, mostly German, so we were assigned to the berth of a Danish count who was out cruising in his converted lifeboat. A neighbor introduced himself as Niels Torp and kindly asked if there was anything he could do for us. Soon we were hearing sea stories of bygone times when he had roamed the world as a ship's carpenter in the last days of sail. Hearing that I had lived in San Francisco, he was interested

Amiga under sail.



Amiga and friend in Vordingborg harbor.

to know if the damage of the great earthquake and fire had yet been repaired.

So began two pleasant weeks in one of the world's most charming capitals. The United States embassy started the necessary process to get the *Amiga* her American papers. A small storm mainsail was ordered and I found much of interest in the busy city where every Dane was a friend. Parks, castles, statues, harbors and canals were joined by winding streets and wide boulevards which were often crowded with pretty girls riding bicycles. The *USS Baltimore* tied up near the yacht harbor and the bluejackets charmed the girls from their bicycles to stroll arm in arm through the city.

The fall weather was crisp and sunny, much nicer than the summer had been, but little cruising time remained, so one Sunday *Amiga* and I started up toward Helsingor (Elsinore). As I was casting off, two University of London students asked if I knew where they might rent a boat to cruise the harbor. This, I suspected, was a suave request for a ride. They were soon aboard and proved interesting company on a leisurely passage to Rungsted, fifteen miles north over a sail filled sea. The Danes seem to have a higher proportion of sailing yachts than is found in the United States, especially in lengths between twenty and thirty feet. Typical is the Folkebaad, Scandinavia's most numerous class. These twenty-five foot clinker built boats have deep cockpits, cabins suitable for two or three and give a snappy performance.

Like many Danish harbors, Rungsted's had been constructed of large rocks, forming breakwaters out from the low sandy shore. Here we found a snug berth with *Amiga's* stern tied to the bowsprit of a seventy foot motor sailer, one of the numerous black painted, oak built cargo carriers that have not changed much in the past hundred years except for their present wheelhouses, diesel power and cut-down rigs. The steel motor vessels and modern transportation methods are making them lovely anachronisms.

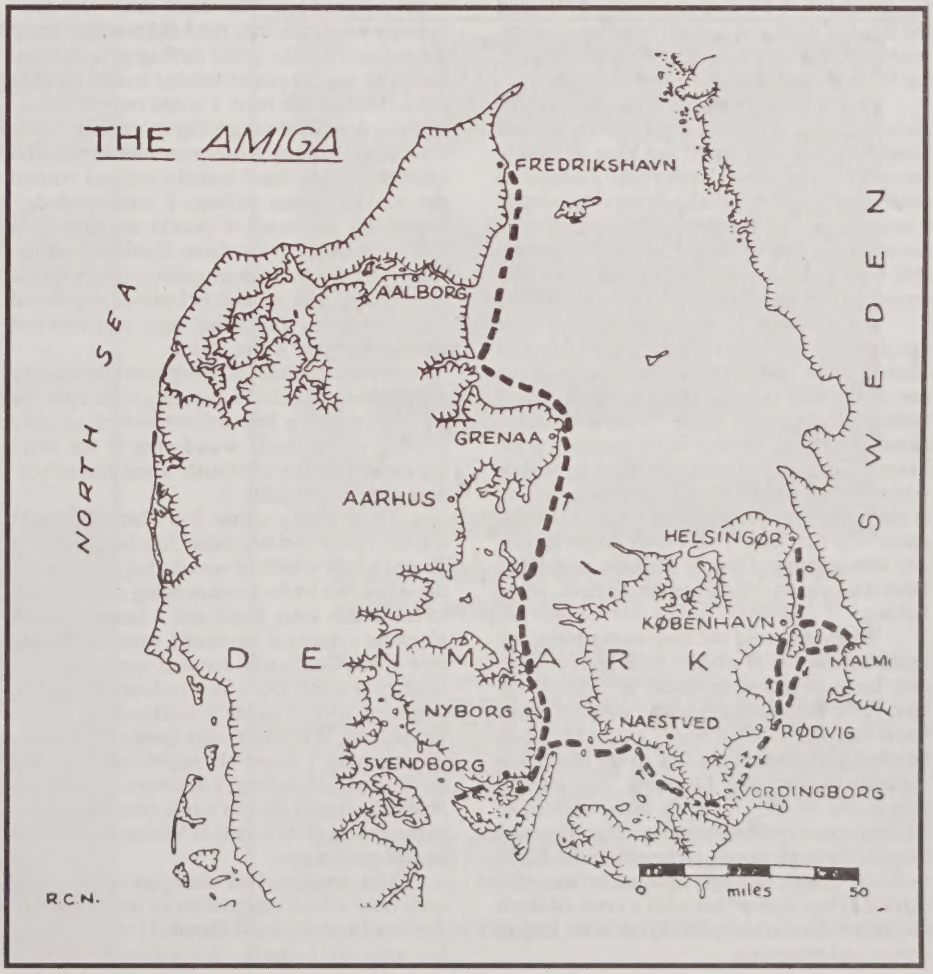
An hour's travel next morning with the lee rail not quite awash brought us to an imposing sight dear to the hearts of generations of seafaring Danes, Kronborg Castle. The sixteenth century fortress, less than three miles from Sweden at the northern entrance to the sound, enabled Danish rulers to collect a tax from all vessels entering the Baltic as late as the mid-nineteenth century.

Amiga danced around the point and into Helsingor's north harbor, just out of cross bow range (I hoped). Here I spent the next ten days while exploring the castle, the half timbered town and the rolling countryside. The castle houses Denmark's extensive marine museum, a fine collection of models, paintings and relics of the sea well worth two visits.

One memorable evening was spent with Aage Utzon, Arniga's talented designer who lives in active retirement at the edge of a nearby forest. Entering his 200 year old cottage, my eyes bounced around the room. Models, drawings, photographs, trophies and relics from far places fascinated me, as did our charming host who had designed many of Scandinavia's most successful craft. After an evening of enlightening conversation over good coffee I returned to *Amiga's* cabin, pleased that Villy Jensen, a sailing acquaintance, had arranged the meeting.

Cooler weather, shorter days and stron

A typical cargo ketch in Svendborg harbor.



ger winds suggested a quick start south toward Kobenhavn. I left on a cool breezy day when the cockpit cover sheltered all but my head and shoulders that protruded from the deep cockpit. This practical arrangement helped to make fall cruising a real pleasure.

At the capital city I picked up the new seventy square foot mainsail, paying thirty dollars for a well made Egyptian cotton sail. I also found a used two horsepower Swedish Penta outboard that seemed to fit *Amiga* exactly. One gusty day I resolved to wait no longer to take a quick look at Sweden. The small main and snug cockpit cover proved their worth on a rough downwind crossing to Malmo where two efficient customs and immigration men gave me the most complete going over I had received since getting a passport in San Francisco. Ashore I was whisked downtown by a yacht club member who drove fast on the left hand side of the street, a scary new experience for me. The Swedes seemed prosperous and friendly, but more reserved than the Danes. Malmo seemed rather characterless after Kobenhavn's charms.

When I asked directions of a young Swedish schoolboy (almost all of them speak some English) I was amused to be told, "Follow this street until you come to a statue of a horse with a king on it." The Swedish language, while similar to Danish, is more melodious and perhaps easier to learn for an English speaking person.

I returned to Denmark on a day that started calmly, then built up to a vicious black hail squall which blew *Amiga* into a calm that finally ended when a favorable breeze carried her into Dragor. Here I was pleasantly trapped for several days by a strong southerly. I used the time to work out a good stowage system, renew the running rigging, fashion a bracket for the outboard and make more friends.

Dragor's buff painted brick houses still show a Dutch influence dating from several hundred years ago when the king invited a group of progressive Netherland farmers to settle there and teach the Danes "modern" truck farming. I visited Herr and Fru Grauballe, a young couple, in their comfortable waterfront home, enjoying their conversation and learning much about Denmark.

The southerly blew persistently, so early one morning I snugged down for a dusting and clawed south until a favorable slant gave me one of the best rides of the trip. On the blue Baltic, streaked with white foam, with fluffy clouds overhead, it was a day to inspire a poet. Later *Amiga* rocked gently in Rodvig harbor where Ruben and I had called a month before. A chilly evening was spent in the cheery forecastle of a fifty-four year old ex-cargo schooner whose crew, Gunnar Hansen and Hans Peterson have an unusual seafaring trade, stone fishing.

When they told me their occupation, my first reaction was to wonder what kind of valuable large stones were found in Danish waters. From the stoutness of the vessel's gear I knew that she handled heavy loads. My hosts laughed and pointed out that every stone was valuable in low sandy Denmark. The sea bottom is one of the country's main sources of this important building material. They dive and grapple for large stones, selling them for $2.50 to $3.00 a ton. Salvage equipment was also carried. They figure that with a crew of three the vessel has to earn $6.00 an hour to pay wages and expenses.

About sixty vessels are similarly occupied in Denmark, but some of their skippers, like Captain Hansen, spend the long winters as officers on larger merchant vessels. During the all too short evening I heard many a well told sea story, including some about how they had outwitted the Gestapo during the war while smuggling refugees to Sweden sandwiched between a false double bulkhead in the cargo hold.

A cold rainy trip brought me to Nyord, a two square mile island where customs seem to have remained unchanged for two hundred years except for the addition of a few modern machines. Almost every islander lives in a thatched village on the hill above the small harbor, and farmlands are divided in a medieval manner whereby each family owns a portion of each type of land scattered over the well cultivated island. I was made to feel welcome as I explored the slopes, watching a bountiful harvest being gathered. Fishing and piloting had evidently rounded out the economy in the past, but fertile farms seemed to have best survived the stress of modern competition.

The next day I headed for Kallehave, then went on to Vordingborg, where *Amiga* and I were warmly welcomed by the Rasmussens and others. On October 1, I shivered as I wrote the date and recorded in the log that for the first time the summer green was noticeably shading into autumn's brilliance. I sailed away one dark morning when should have stayed in harbor. That wild downwind ride proved *Amiga's* ability beyond my fondest expectations. The steepness of the eight foot waves that quickly built up in fifteen miles of open water amazed me. The small main was soon entirely too much sail, but I did not dare leave the helm to use the roller reefing gear. A steep breaking sea caught broadside would quickly have finished the boat. I could only continue rushing down the advancing mountains while I managed to keep a life preserver handy and untie the safety line I usually secured around my middle when sailing. I was headed, I hoped, for Bisserup, a poorly marked little fishing village on southern Sjaelland's shallow shore. After almost getting trapped in a long row of fish net stakes I thankfully found the entrance in the fading light and zoomed through to quiet water inside.

What a contrast. Cows grazed peacefully near fishermen calmly mending nets. I got the sail down and a line ashore before wearily sinking to the deck, wondering at the local unconcern for my obviously great feat of seamanship (or stupidity ?).

Then along came Jon Hansen, hotel owner, sailor and one time San Franciscan. I do not know which of us was happiest to see the other. We had a great evening reminiscing in his warm little hotel and I learned much about far corners of the world, even something new about California. Jon had spent only two winters at home since he was fourteen and he dreamed with a sailor's restlessness of the South Seas. When he tested *Amiga* the following morning I noted his appreciation of her good points. How long, I wondered, could this able sailor resist the sea's call, blind as he was to the charm of this ancient Viking base where he had grown up.

The weather had changed completely, with only a faint suggestion of the preceding day's sea as *Amiga* and I headed for Svendborg by way of Lohals. Svendborg, one of Denmark's most beloved towns, probably sees more of the old sailing vessels than any other harbor. It was here in the Ring Anderson shipyard that many of them were built from carefully carved models. I was helped to a berth near a permanently moored barkentine school ship by Arne Christiansen, another single hander. In his exceptionally able twenty-three foot Norwegian sloop named *Colin Archer* he had sailed to England the previous summer. We enjoyed getting to know each other despite a limited mutual vocabulary.

Arne, or Ulle as he was known to his friends, was a carpenter who had retired at a young middle age to spend his summers sailing and his winters preparing for the summers. He lived a simple bachelor life on a small budget and had an interesting philosophy envied by many. The day our courses parted, as he headed toward his home in northern Denmark, I little realized how soon we were to become very well acquainted.

I too tried to leave Svendborg's busy harbor, but head winds and current conspired to keep me there long enough to meet Captain Asker Kure aboard his old English built ketch *Santa Maria*. A master mariner of the old school, Captain Kure had retired from skippering his own cargo vessel around northern Europe to live aboard his yacht, which he had bought with a world voyage in mind. The day we met he had returned from a single handed voyage around Fyn, Denmark's second largest island. I went to look over the businesslike vessel and soon found myself in the comfortable main cabin where the skipper and I discussed many common interests. He had grown up in sail, spent several years in American west coast steam schooners, and was proud of his vast knowledge of commercial sailing vessels. We found ourselves talking more and more of a world cruise.

The following day was dull but suitable for sailing among the small islands to Aero Island, my jumping-off place for the voyage to Kiel. In Soby harbor I was delighted to find my friend Erick Knudson installing new tanks in the large motor yacht he skippered. I enjoyed some good discussions with his brother-in-law Helmut and with Herr Neilsen, the young engineer of the local marine engine factory. This fascinating low overhead shop employed twenty-five craftsmen to produce thirty-five different models, an uneconomical arrangement perhaps, but the owner liked the challenge of new problems and tried to fill every special request for two cycle heavy duty engines of from two to 150 horsepower.

Near Soby I also inspected the dusty interior of an old windmill used to grind grain. Its leisurely flexed arms seen on the horizon were deceptive. Up close they whooshed around my ears to deliver enormous power to the rumbling machinery.

A delay caused by bad weather on Kiel Bay enabled Ulle Christiansen to reach me by phone and propose a radical change in my plans. "Why not spend the winter with me," he urged, "then cruise the rest of Scandinavia in the spring before heading south? It's far too cold to go now and, besides, I'd like to learn English." I accepted the kind offer and we agreed to meet in Nyborg harbor northeast of Svendborg. I set off to join Ulle in Nyborg where we spent a few days with harbormaster Thiesen, a rare combination of commercial seaman and yachtsman with an expert's knowledge of the sea. Ulle and I amused him

with our minor language troubles. which usually arose when I assumed that Ulle was speaking Danish whereas he was really attempting English.

Sailing from Nyborg, Ulle and I discovered that our boats were quite well matched as cruising companions and I never tired of watching *Amiga's* staunch escort slice through the cold water of Great Belt and the Kattegat.

The winter slipped by at Ulle's hospitable home, a seagoing structure that had started life as the bridge of a Canadian mine sweeper. Standing a few feet from the icy Kattegat, it was ideal for us with our boats drawn up under shelter just outside the door.

A great many friends helped the winter pass almost too quickly as plans formed for a world cruise in the *Santa Maria*, and *Amiga* and *Friend* were readied for shipment to San Francisco.

(Dick Newick's chronicle of bygone summer adventures afloat in northern Europe first appeared in *The Rudder* in 1956. His account of the earlier part of this summer adventure, "Water Wandering in the Low Countries", appeared in our June 15, 1995 issue).

Motor sailers in Svendborg which carry cargoes of live fish.

29 Days Before the Mast

The Cruise of the *Flamingo* Seattle to Santa Barbara In 55 Days

Part 1

By Jeff Douthwaite

"It's not in the final destination, it's in every day, the joy in life is found along the way."

We, Marcia and I, are essentially retired, having a winter cottage in Santa Barbara and a summer cottage in Seattle. I love to be able to go to sea in either place. Marcia prefers to vacation in Santa Barbara and work part-time in Seattle (she's from Ohio, so we must forgive her landlubber-ishness). Santa Barbara cruising requires a sea-going boat, as it lies on the ocean, while in Seattle, one can be safe in a lesser craft. When I saw the 34' fishing vessel *Flamingo* for sale, her shape and low price attracted me. "Here is a sea-going small ship I can afford," I said to myself. (I am not the first man who has been led astray by an attractive shape.) For a total price of $7,500, complete with autopilot, radar, VHF, CB, fathometer, Loran, a heavy powerful engine, a loud-hailer, three bilge pumps, and flopper stoppers, I believed I couldn't go too far wrong. So the sale was done without benefit of a survey. Besides, I believe in having some mercy on the seller.

Having been around sea-going craft of some kind or other for the last 60 years, I believed myself competent to survey the *Flamingo* (remember the foolish lawyer who had himself for a client?). Anyway, I sniffed the bilge, admired the girth of her 4" x 6" deck beams, listened to the engine, tested the various electronics, kicked the gunnels, and all looked healthy enough, especially at that seductively low price. So the deed was done, and as of June '97 the *F.V. Flamingo* was mine!

I set about converting her to a pleasure craft by first removing her big wooden gillnet reel. This monster weighed about 2,000 pounds, was driven by a rusty Model A Ford rear-end, and required a steel-cutting Sawzall, a bolt cutter, heavy hammer and chisel, sweat, and a heavy-duty hoist. The stern of *Flamingo* rose about 5" as the reel-and-axle was hoisted off.

Miscellaneous steel drive shafts for power take-off links were cut and thrown away, along with their supporting timbers. Then, when I started to fill her water tank and heard water trickling out into the bilge, I knew there was a problem. The old rusty water tank had to be removed, which required surgery on the aft deck atop the tank. This, in turn, exposed some rotten ribs as well as rotten decking. So rotten ribs were dug out, and sister ribs cut from an oak plank. I hauled her, clamped the new ribs to the planks with stainless steel bolts, yes bolts, washers and nuts, as well as screws where appropriate. I know, bolts do not present a smooth surface, but I wanted to be sure that the sister ribs did the job of holding planks on and hull together. To install even 1/2" thick oak ribs required a steam box which I made from plywood and heated with a rental wall-paper steamer tool. The cedar planking over the ribs seemed sound enough, so we had to replace no planks. Hooray for that.

This experience with oak ribs helped build my confidence. Have you ever observed the strength of a piece of oak? It is amazing. And that's comforting to remember when the waves are crashing into the hull, which is held together by 48 oak ribs on each side of the keel. Oak is very tough and strong, as are the ships made from it.

Then after removing several lead-sheet patches from the hull, and what they call the "bear shit" from under them, re-caulking the area with cotton and cement, she was painted, and re-floated. There were some thru-keel bolts in her stern I neglected to check and tighten when she was high and dry, which allowed leakage in the stern, but this I reduced by pressing in cotton from the inside. Not the right way I know, but less expensive than hauling her again.

Over the next month her leaks slowed to about 3 gallons per day. Not ideal, but tolerable. I had grown up with leaky wooden boats. The attitude was, "So she leaks, so what? Bail her out! Besides, the salt water inside slows down the rot and keeps the bilges clean." (and other rationalizations). But, the point is, we didn't worry about a leak or two and considered them a natural part of a wooden boat. This I expect is more the rule than the exception in the long history of ships. We moderns with our dry plastic boats tend to forget our history with wet bilges greatly outnumber the dry years.

The next major job on *Flamingo* was fitting and attaching new deck stringers and beams to the old bilge stringers, and screwing on a new heavy plywood deck. Then, new scuppers were cut and fiberglassed to allow the new deck to be self-draining. Lots of work, but, when finished, she was certainly stronger. Also some rot was found and removed from the gunnels and strips of old ironwood there were replaced with oak. Again, stainless steel bolts were liberally applied. One of the iron supports for a stabilizer pole was too rusted, so it was removed and replaced with a new one from Kolstrand Co., the inventor of flopper stoppers.

I was surprised to find under the focs'l floor, a ballast of stones! Yes, rocks about the size of your fist, black and greasy. I removed about 200 pounds of these, in the interest of a cleaner bilge and less weight in the bow, which seemed too low in the water. To lower the stern now, in the absence of the heavy gillnet reel, I lowered in some 400 pounds of 1" steel plate. Again, not ideal, it will rust, but the price was right. Free!

Testing the *Flamingo* later in Puget Sound and Lake Washington showed she rode well enough in a chop, and her Chrysler Marine engine seemed reliable enough, though not quiet or fast. Elmer, her autopilot, was at first unresponsive, but I brought him to life with liberal doses of electrical motor cleaning fluid and by replacing a few chafed wires. I studied her Loran instruction book and got it to work, but much preferred a simpler, faster, and more accurate GPS, which I transferred to *Flamingo* from another boat.

We did install a workable floor in the aft fish-hatch area, preparatory to adding an aft cabin, which has not yet been done. Obviously, there was and still is, much more to do, to convert her to a pleasure cruiser, but my time, money, and energy were severely limited; the summer was about over, so I slapped on some new hull trim, and deck paint topsides. It was time to cruise *Flamingo* south to her new home in southern California. I invited several interested friends to join me en route, one at a time, but only one, Robert Edelstein, accepted. Due to the pressures of his work he could only accompany me for a couple of days though, but he joined me at Ilwaco, Washington.

Seattle to Port Ludlow: Loading up for a sea trip always takes more time than expected and Friday 9/5/97 was typical. By 11am, all was ready enough and I shoved off from Fishermen's Terminal, Seattle. I waved goodbye to Ed Chevalier, on his salty trawler, the *Jean C*, and we were off! It was slower than usual traversing the Ballard Locks, but at about 12:30pm we were out into the salt water of Puget Sound. "Hooray, we're off!" I shouted, as we left Shilshole Bay astern, heading for Point Jefferson.

All went well enough, Elmer the autopilot was steering well, though I wondered why the engine, who I call Brutus, emitted so much bluish smoke up from the floorboards covering it and into my nose. The bright sunlight coming in the open wheelhouse door emphasized the blue smoke. "I'll check it when we stop for the evening, maybe at Port Townsend or Ludlow," I said.

As usual, Point No Point had some interesting tide rips, which were pretty, and as we passed Foul Weather Bluff, running with the current, we made 9.3 knots. I wanted to check out the engine smoke problem, so decided to call it a day at Port Ludlow, anchoring in there not far from the floats to which I could row later, and have supper at the local posh restaurant.

It didn't take long to locate the source of the engine smoke problem; the two breather pipes were plugged with greasy gunk, and so the crankcase smoke was not being carried to the carburetor, but instead came from the crankcase, out the oil-input pipe and up. Cleaning and replacing the breather pipes was easy and it did the trick. "Well, hooray for that, no real problem," I said. "Ok, let's wash up, launch the skiff and have a walk and supper before it gets dark." Yes, I often talk to myself while on board. Why not? Marcia, at home, happily talks to our dog and cat and sometimes to me, and she's quite sane, as far as I can tell, anyway. Like her pets, the beauty of my boat is that she doesn't answer back or argue. After supper I called Marcia and we chatted a while on the telephone, our usual practice when I am on the boat is to check in every night. She was going to work as a volunteer at the U District Farmers' Market tomorrow, Saturday.

From Port Ludlow to Port Townsend: Next morning the sun was trying to come out when we cruised out of Ludlow, but we soon ran into a heavy fog. Oddly enough, it was the first time I'd run *Flamingo* in a fog, and had never really used her radar before. A sailboat was heading north under power near the rocks off Mats Mats harbor and for a few minutes we cruised along behind her. But her drunken track over the water indicated she didn't know where she was either. By this time my radar was working well enough to roughly spot the area of Port Townsend Channel so we left the sailboat and slowly followed the radar's guidance. Soon the narrow channel appeared on

the radar. I cheered for the efficacy of radar, and we arrived in the channel with a strongly opposing current. As we traversed the channel, the fog lifted and it was an easy shot in the glorious morning sun to Port Townsend.

This was the busy weekend of the Wooden Boat Show in PT, so I didn't bother trying to find a mooring slip, but brought the *Flamingo* to anchor outside the marina, south of town, nearby many other craft. Again I launched my skiff and rowed in to the float. The quarter-mile walk downtown was pleasant and I enjoyed a good breakfast. The town was jumping with wooden boat lovers and I too enjoyed the scene. *Flamingo* is wooden, so we felt at home.

Flamingo's engine, Brutus, had stopped emitting smoke, but he was still running somewhat roughly, missing on two cylinders in fact, so I wondered and decided it might be dirty valves, as other people had said was a typical failing of Chrysler Crown engines. To test this, I crawled in beside Brutus and increased the valve clearance on cylinders 5 and 6. This added to the engine's clicking noises, but otherwise made no difference. He still missed. But to be on the safe side, I left the valve clearance as it was, thinking maybe this would shake some carbon loose and get a better seal over time. The old Chrysler-Marine engine has such a heavy flywheel he can miss on two cylinders and one can scarcely feel it. So, I wasn't quite sure it wasn't normal. More rationalizing, I know. Sometimes, when warm, he had trouble starting, but otherwise Brutus seemed quite reliable. So, on we went.

Port Townsend to Port Angeles: Sunday 9/7/97 saw us rounding Point Wilson at the entrance of the strait of Juan De Fuca, and heading west toward the ocean. Point Wilson, where we exit Puget Sound, seems like something of a jumping off point. I cut close in at the point, since there is plenty of water there, and enjoyed the first feel of a roller from the Pacific Ocean about 75 miles away. "Yea ha; hooray for the ocean!" I shouted. As we approached Dunginess Spit, I was aware the propeller shaft support-bearing was rattling more than usual, so we slowed down a bit. With a grease gun, I applied some grease to the bearing, which helped for a while. "Well maybe I can get that fixed in Port Angeles," I said. It sure rattled, but created no other problem, and we made it to Port Angeles in mid-afternoon in the warm sunshine.

We pulled into the float there in front of the town, tied up, and I went for a refreshing walk. This is part of my daily medicine. The other part is getting plenty of rest and sleep. That's it, no pills, drugs, or doctors, nothing else needed, except a good meal or two if possible. This is consistent with the advice from Dr. Andrew Weil, who says sleep is the best medicine and walking is the best exercise (but not both at once; sleep-walking is dangerous).

On Sunday in Port Angeles, I expected I would find no one to check that propeller shaft bearing, so decided to have a look at it myself. With very little trouble it lifted out from its bolts to the hull's stringers, and it appeared I could fix it myself. "Well, hooray for this, it looks like I can tighten it by filing down the babbitt sleeve," I said. Yes, with a flat file, and a C clamp to hold the bearing firmly, it was easy to reduce the babbit lip which holds the two bearing shells apart. I was careful not to file off too much, which would make it too tight when reassembled, so it was a trial and error process of getting it right. In about two hours, it was back together and felt about right. Then, with tight spring lines attached to the float, running Brutus in gear showed a real improvement; she was nicely quieter. "Yay ha, good for you, Douthy!" I cheered. Douthy was a nickname I picked up years ago, when a sailor on the Survey ship *Pathfinder*.

At Port Angeles, the mooring float was noisily attached to the dock, squeaking and grinding with every swell, so I decided to unhook and tie onto a nearby mooring buoy instead. This promised a quieter evening and more privacy. But of course, to come and go from the buoy required that I launch the skiff. No problem here, I did so, rowed to the float, and walked around PA, enjoyed the sights, eats, and drinks of the town and returned to *Flamingo* about at dusk. The wind was fluky, so I set out a stern anchor to hold *Flamingo* away from the steel mooring buoy. To better the chances for a quiet night I also tied the skiff off from *Flamingo* on the end of a long 12' sweep we carry, so that the skiff would not bang against *Flamingo* later in the night. This worked well and the night was pleasantly quiet.

Speed, Another Modern Malaise: In Port Townsend, I overheard a young woman say with exasperation, "God, it took forever to get here on that sailboat. It's an exercise in patience." She inspired me to wonder. We are so used to traveling fast at highway and jet speeds, boats seem oh so slow. But perhaps we need to remember our human history and ask why are we so concerned with speed? Also traveling on the sea is not for speed but for communion, with nature, the sea, waves, birds, sky, clouds, and yes, ourselves. We operate with a biological clock, not a silicon one like a computer. If we are uncomfortable and impatient at sea, I suggest it is we who are at fault, not the boat, we are apparently not making the communal connection.

So, while she said, "It's an exercise in patience...", I suggest it's also an exercise in one's perspective of travel. Maybe it helps to remember human history has moved at a walking pace for most of its time. Jet speed is only a modern invention, which puts us out of touch with the reality of the human scale. Also, the boat's slow pace and the beauty of the environs may serve as medicine to the harried modern soul. It certainly does for me. It offers an easy escape from the modern malaise of speed-seeking found all too often on land. Humphrey Bogart said, "The sea is the only really free place left for modern man."

Yes I took a long time to travel by sea from Seattle to Santa Barbara, 29 days at sea, and many other days waiting, but it was far more fun and memorable than any of the much faster trips by land or air I have made between those cities.

Port Angeles to Neah Bay, Line Caught in Propeller: Next morning, we shoved off bright and early for Neah Bay, towing the skiff astern. But soon a west wind came up and with it a chop. When the skiff began to fill, I put Brutus in neutral and proceeded to haul it up on deck. Just as she was all steady up on deck, I noted, too late, a stern line from the skiff was in the water and about then it became very tight. "Oh, no, it's caught in the propeller!" I shouted, "Damn it!"

About then I remembered that in neutral, the propeller still turns slowly forward, so this is a trap I fell into. Sure as hell, the line was in there, tight as a shroud. After turning Brutus off, I studied the situation a while. One thing was for sure, I didn't want to swim in that cold water, another was that I probably couldn't reach the propeller shaft from the skiff either.

So I wondered; then a bright idea hit me! I tied another 1/4" inch line to the fouled skiff line, brought it around and into the wheelhouse. Then after cutting the end of the fouled line at the skiff, I held the new attached line tight in the wheelhouse, started Brutus, pushed the shifter gently into reverse whilst pulling gently on the line. Sure enough, it slacked off about a foot. Then I shifted gently into forward and it came about another foot, and by backing and forthing this way the line became untangled and clear of the propeller shaft "Hooray," I shouted, "We're off again. And let that be a lesson for you, Douthy. Be more careful, dammit! Think first. That could have been a small disaster. It might have been so embarrassing too."

Then, after the skiff was well secured on deck, all lines clear, Brutus was again engaged full ahead and we were off for Neah Bay, which we reached some hours later without further incident. The moorage there had received a nice facelift, all looked new, clean and shipshape. We tied up and I went for a walk and a supper in the local hamburger joint. I prefer to use the pronoun "we" to include the ship, engine, and all her electronic support systems, on which we so much depend. Seems only fair.

Cape Flattery, the Jumping Off Point, and Lapush: After the weeks of thought, preparation, work, and sweat, it was exciting and energizing to actually be there, off Cape Flattery heading south. Finally! This was the jumping-off point, a real ocean-going test of the boat, its systems, and its skipper. The weather, extremely significant at this point, was perfect, it was a fine sparkling day, not much wind at first but it soon developed to 10-15 knots from the NE as we rounded the picturesque Cape. Soon pretty whitecaps were following us down the beautiful rockbound coast. The swells were breaking on the rocks in sparkling beauty. There was a swell from the NW but it was just enough to be interesting, about 3'-4'. All was working well enough on *Flamingo*; the scenery was lovely. We were making good time towards my first ocean port of call at Lapush. All was right with the world.

I cheered and sang with happiness and good spirits. Some of the singing was also to bolster my confidence I admit, for it was lonely and a bit scary out there, with nothing in sight except the sea, the surf and rocks, an occasional seagull, and me on the *Flamingo*. The singing helped too. "A Rovin, A Rovin, Since Rovin's been my rue-aye-in..." was my favorite song at that point. It is odd, how one does not tire of one's own singing. Others do though, and quickly; this is a major advantage of cruising solo.

I did, of course, have a 40lb stout anchor, attached to 30' of chain and about 300' of anchor rode in case of trouble, to hold *Flamingo* off the rocks until I either fixed the problem or, if absolutely necessary, radioed for help. This was the worst-case scenario. My only associated worry was hoisting all the line, chain, and anchor afterwards. I was unsure if I could lift it all, especially if it were hooked to a mess of kelp or seaweed, as often happens. *Flamingo* lacked an anchor winch. But if hoisting it all proved impossible, I could

always cut the line and buy a new anchoring system at the next port.

At any rate this was a kind of last-ditch insurance, which is essential for offshore cruising in these waters. And like most insurance, the likelihood of ever implementing it was remote, it was more of a worry than a reality. So we stayed well out around the 30 fathom line, about two miles out, to give us plenty of time to attend to whatever might break, time necessary to work, time in which, hopefully, it would not be necessary to anchor.

I had said to friends in Seattle that I would use this day, and this locale, around Cape Flattery, as a test area to see how well my ship rode in the ocean (and how much faster she leaked when stressed by the ocean waves) and if all was not well, I would turn back to Neah Bay and either fix it or return to Seattle and abort the trip. This promise was, of course, almost impossible to keep. To implement a real test of boat and systems this way, one would have to encounter the right intensity of seas, hopefully starting calmish, then increasing to become big enough to be a real test. Such a sequence of conditions was not at all likely. To honestly run such a test, one would have to spend a week or several at Neah Bay, coming out each day to see what tests the ocean had to offer and continuing to do this until the proper conditions had occurred and the proper measurements had been made.

Such an exercise in patience and scientific objectivity was not in my cards for several reasons, but mainly because I didn't have the luxury of all that time (or money). Fall was fast coming on, the weather, if foul here, would also be bad farther south, as I made my way down the Washington, Oregon, and northern California coasts. And to avoid that difficulty I should make my way south as soon as possible. So unless something drastic happened with the hull, its engine, or steering system, I was off, committed. This was the point of no return (besides, it would be embarrassing to return to Seattle, with rudder between my legs).

I did pay close attention to the bilge, as *Flamingo* did some rolling and plunging in the seas that first day on the ocean and all appeared healthy enough. She leaked faster than normal but not too much so. I went below and looked at the hull planks, which were exposed near the fish hatch amidships, and noted a leak, which splashed in at the starboard gunnel where a new scupper apparently needed more resin. This was only an occasional seep when a bigger wave swept up the boat's side, and I made a note to add resin to it soon. Not now, for sure. Now was the time to steer and to make good speed down the rugged coastline to Lapush, and most of all to enjoy the scene, which was glorious. As Pirsig said of his trip, in *Zen and the Art of Motorcycle Maintenance*, "to make good time," with the emphasis on good.

Elmer, my autopilot, steered poorly in the ocean swell and the following sea, over-steering stupidly like a landlubber, continually hunting back and forth, back and forth, so I turned him off and did it myself. This was not ideal, but as they say, "perfection is not an option". Especially true on an old wooden boat. Perhaps I could make the autopilot less sensitive somehow in the future. "Later man, later. OK, Elmer, have a rest." I said.

In general, I was well pleased with the stability, docility and nonchalance with which the 34' *Flamingo* rode those ocean waves. For another test, I turned her broadside to the seas and ran her in that worst rolling mode for a while, noting well how she rolled and slopped, not alarmingly, probably 30 degrees at most to each side. This was as I had hoped. She had considerable ballast, a heavy old Chrysler Marine inboard engine, a low A/B ratio, which made her less sensitive to the wind, and I was pleased with her apparent seaworthiness.

Later, as I came to know her better, I grew to love the way she seemed oblivious to whatever the ocean threw at her, always riding as straight up as possible, comfortably unconcerned with all the whitecaps' sound and fury. She seemed to have her own thoughts, always knew which way was up, and, like a proper little lady, always kept her bottom side well down. Also, her stern gunnel was always high and buoyant enough to stay quite dry even with huge 18' capping waves rising up behind and rolling menacingly down on her. These, the 18-footers, were to come later, off Oregon, thanks be. Had I encountered them that first day out, I would have returned to Neah Bay for sure. They are scary and take some getting used to.

Flamingo, an ex-gilnetter, is a double ender designed for use in northern and Alaskan waters, and I did expect her to be a good "sea boat". But the reality of her dynamics at sea was a real pleasure to behold. I grew to believe she could not be knocked down or rolled over by even a terrible sea with breakers... but this belief has not been thoroughly tested and I rather hope it never is. She has a full-length keel and skeg, averaging about 9" deep, which helps her run in a straight line, but is not too large to allow her to sideslip off a big wave and ease down its side. In this respect she is safer than a keeled sailboat, which can't side slip much. The keel and skeg also protects her propeller and rudder, of course.

The graceful shape of her hull is a result of fishing boat evolution over centuries, and she has an especially efficient stern. This I judge by the fact that she makes a very small wake as she cruises at a hull speed of seven knots. And she makes about three miles per gallon of gas which is about twice that of a comparable modern planning-hull cruiser. My comment, regarding evolution of her shape, is documented at Santa Cruz where there is a harbor display signboard discussing a very similar fishing boat design from Italy and how it evolved. *Flamingo* was built in 1955 by Ole Vested, a Norwegian-Canadian, but the shape of her hull was very similar to that of the Italian boats. A picture of Norwegian fishing boats shows *Flamingo* is of that descent.

As a further test that first day off northern Washington, I launched the "flopper stoppers" (stabilizers) and noted they did reduce the rolling appreciably, but they also cost us about a knot's speed, speed which I could not well afford to lose, cruising at barely seven knots to begin with. So, while it was more comfy with the poles out and the fish down, it was too slow, so we rarely used them thereafter. Perhaps I could have had it both ways, stability and speed, if I had cracked on the engine's power, but here again Brutus, the engine, was old, complete with some suspicious noises, rattles and rumbles. Also, her propeller shaft bearing was still rattling too much for my comfort, even at 1600 rpm. So I decided to run slowly, sans floppers, to hang on firmly, and to steer her myself when running down a following sea. Elmer, the autopilot, was named after an old ad I remember which said, "Let Elmer do it." So I did, when he could, but as it turned out all too often he couldn't. He is essentially a fair weather helmsman. When it's calm he is excellent but when rough he continually hunts, which will prematurely wear out the chain-link steering system I fear.

(To Be Continued)

Pedal for the Planet Update

By Nancy Sanford

The Pedal for the Planet Expedition, which is now called Expedition 360, is the adventure of two British men going around the world by leg power (a pedalboat on the water portions). They are now in the Solomon Islands, having crossed 95% of the Pacific. I moved to Hawaii to help them while they were there. Steve Smith and Jason pedaled from San Francisco to Hawaii, then Jason pedaled alone to Kiribati (Gilbert Islands), and then one of the boat builders, Chris Tipper, pedaled with Jason to the Solomons. Steve has now taken a position in Devon, UK running a ferry between the islands while working on his book.

April Mann, the school teacher from Colorado who spearheaded the development of what has become an extensive world-wide school program among the schools the expedition has visited, has become associated with the Expedition's movement westward. April, who became a close friend of Jason's while he was recuperating from broken legs sustained during the inline skating trek he did across the USA, is pedaling with Jason from the Solomons to Cairns, Australia. April has never been to sea before. She will become the first female to join this expedition, discounting my own hour's worth 200 miles from Hawaii while Jason said goodby to those on the sailboat that followed him out of Hawaiian waters.

The Expedition is currently underway again in the Coral Sea, they are battling SW winds and current which are making life difficult. They do three or four hour daytime shifts with perhaps six hours at night. It rained almost every day for the first week they were at sea. Now past their second week, they have encountered 30' waves. Life can seem pretty easy back here on land while reading their daily journal entries on their website www.goals.com/expedition360. It's rather humbling. The website still carries all the old daily journals of their voyages and land experiences, the voyage segments sent by satellite. Jason, who's done both the Atlantic and Pacific, gives this Coral Sea voyage high marks for being the worst of all. They still don't have any major sponsors, though companies have donated food or equipment.

Sitting on the side of *Moksha* after only an hour of pedaling, regretfully about to return to our escorting sailboat leaving Jason to pedal on alone.

My Own Pedalboating Efforts

By Nancy Sanford

Pedalboat designer/enthusiast, Phil Thiel of Seattle, has been strongly encouraging me to write about my knowledge and experiences with pedal boating. I was the VP for Water for the Human Powered Vehicle Association for years (just retired last June), primarily the torch bearer for manufactured pedal boats, as well as for the sport itself. I am a member of the International Water Cycling Association, in a special category I guess since I'm the only member who isn't a manufacturer.

I maintain a website, www.pedalpoweredboats.com, at which I offer assistance to those who contact me regarding their interest in pedal boats. I've helped a number of people sort through their thinking regarding the different qualities of the various boat designs and the buyer's specific needs and wants. Many times the folks are headed toward the wrong boat simply because they don't know about, or have information about the other boats and their amenities. I carry links on my page to all the other manufacturers.

I also have another website, vinoybasinboatrentals.com, for the business I've just started in downtown St. Petersburg, Florida which rents pedal boats, kayaks, and electric boats (which are actually altered Waterbug hulls, the forerunners of the Harken Mallard). I currently have an Escapade, Hobie Mirages, and likely soon a SeaCycle, Velosea, and hopefully an Ozone, if they'll send me one! I've offered the IWCA members opportunity to place boats here for either demo and/or rental.

Plans are underway for special human powered events to focus on pedal/paddling sports, fitness, and Tampa Bay environmental issues. Kayak stores will offer demos of their boats, health businesess will have information available, and Tampa Bay Watch will be on hand. Special events for the Outrigger Canoe Clubs in the area will include demo rides and a special demonstration competition in Vinoy Basin.

I am pleased about the series of articles you plan on the pedal boats. The Mallard/Escapade will always be dear to my heart, but there are so many really good, and different boats now, that I've begun to pick and choose what kind of pedaling I want to do that day.

Nancy Sanford, VinoyBasinBoat Rentals.com, PO Box 1298, St. Petersburg, FL 33731, (727) 525 8842.

Flood & Ebb Tides In Small Boat History

150 Years of Big Ideas & Turning Points

By J. Kim Apel

Part 1: Founding Fathers

For better or worse the history of American yachting began with the wealthy capitalists of the Victorian era (1840-1900). American financier J.P. Morgan's famous yachting aphorism, "If you have to ask how much it costs, you can't afford it," expressed an elitist image of yachting that lingers today.

Parallel to the development of yachting for the wealthy, however, was a vigorous small boat movement by and for the middle class. Its rich history has been upstaged by the smug glamour of leisure-class yachting. Small boating followed its own evolution, apart from the proper yachting world.

Henry David Thoreau is best known for his essays on simple living, collected in his book entitled *Walden* (1856). Thoreau's philosophy was opposite to those of the wealthy class of Americans then forming the new sports of competitive yachting and rowing. Less well known than *Walden* are Thoreau's journals and a collection of essays entitled *The Maine Woods*. In these he wrote perhaps the first personal record of American pleasure boating, and articulated the values which still distinguish the small boat subculture from "mainstream" boating. He wrote of outings in various small boats, from day trips close to his home in Concord Massachusetts, to long trips in the then wilderness of Maine. Thoreau returned again and again to small boats for their inherent pleasures, not to travel or fish or race. He regarded his boat as a kind of silent companion, recording its qualities and shortcomings in his journal.

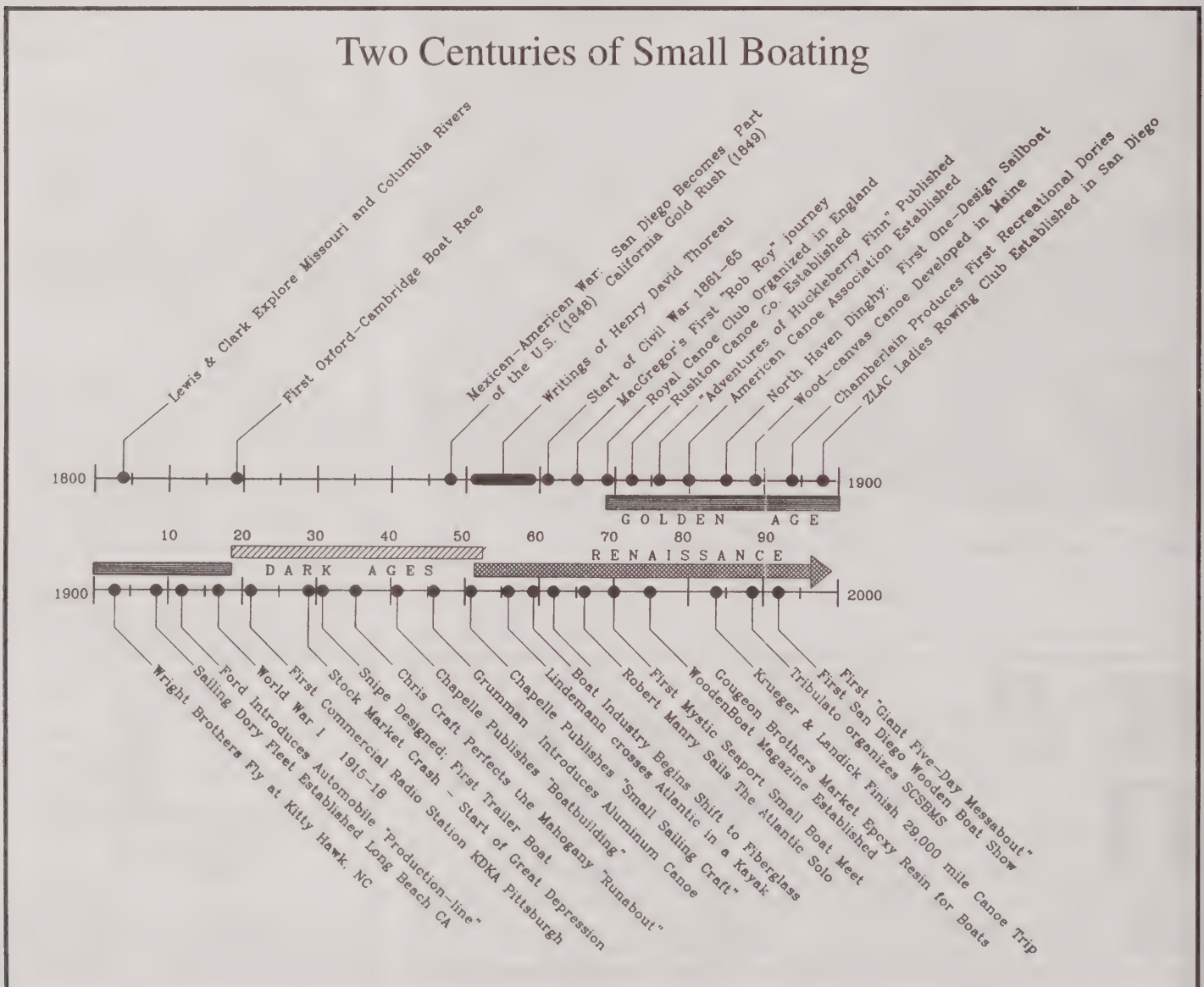
(August 1852) "I float slowly down from Fair Haven till I have passed the bridge. The sun... has come out again just before setting, with a brilliant warm light, and there is the slightest undulation discernable on the water... The reflections are the more perfect for the blackness of the water."

(March 1853) "Launched my new boat. It is very steady, too steady for me; does not toss enough and communicate the motion of the waves. Besides, the seats are not well arranged; when there are two in it, it requires a heavy stone in the stern to trim. But it holds its course very well from being so flat from stem to stern... My boat is very good to... go before the wind, but it has not enough run to it... but lugs too much dead water astern. However, it is all the steadier for it. Methinks it will not be a bad sailer."

(August 1858) "I have spliced my old sail to a new one, and now go out to try it in a sail to Baker Farm. It is a "square sail', some five feet by six. I like it much. It pulls like an ox... The yard goes about with a pleasant force... How sturdily it pulls, shooting us along, catching more wind than I knew there to be wandering in this river valley... how it becomes my boat and the river, a simple homely square sail, all for use, not foRrshow."

Neither Thoreau nor his writings were well known when he died in 1862 at age 45. A few years later, however, Englishman John MacGregor got the notion to go small boat cruising in the summer of 1865. MacGregor had previously visited Canada and Siberia, and had seen native birchbark canoes and skin-covered kayaks. When he returned home he had a boat built to his specifications, the type of which had not been seen before in the

Two Centuries of Small Boating



"civilized" world. Its shape and double-bladed paddle were patterned somewhat after skin-covered kayaks, but broader, like a small canoe, and could be rigged for sail.

It was "clinker-built" in European fashion, using bent wood ribs, longitudinal planking, copper fasteners and varnish finishes. It was far lighter, however, than any conventional small boat. MacGregor sailed the Thames estuary and the English coast and paddled all the major waterways of central Europe. He wrote a popular book recounting his experiences, *1,000 Miles in the Rob Roy Canoe*. Other journeys and books followed.

MacGregor's adventure stories and other promotional efforts inspired the establishment in Great Britain of the Royal Canoe Club in 1870. This marks the start of what may be called the "Golden Age" of small boating. Enthusiasm for recreational small craft spread rapidly to the United States and Europe. The New York Canoe Club was established in 1871, with many similar clubs following throughout the United States. What MacGregor called a canoe might be called a touring kayak in the U.S. nowadays. In MacGregor's time a "canoe" was understood to be decked and propelled with a double-blade paddle by one person. Only later in North America did the influence of the native birchbark and dugout canoes lead to the rise of the tandem open canoe, still called the "Canadian canoe" on the other side of the Atlantic.

MacGregor probably did not know of Thoreau. His motivation to cruise in a small boat was apparently original. His boating achievements and his writings exceed Thoreau's in quantity, if not quality. His influence in developing recreational boating was greater. Thoreau was first, however, and his introspective writings capture the simple pleasures of boating.

Reflecting the American values that accompanied the rise of small boating's Golden Age is the hero of Mark Twain's *The Adventures of Huckleberry Finn*, published in 1872 and widely regarded as the most important American novel. In the story, 14 year-old Huck Finn, living in pre-Civil War Missouri on the banks of the Mississippi River, fakes his own death and runs away to float down the river on a crude raft and dugout canoe. He finds along the way freedom, moral insight, adventure, and self confidence. The boats aren't important in themselves; rather they provide a vehicle for Huck's life-changing experiences.

Huck Finn resonates strongly in the American psyche. His example suggests that anyone, going self-sufficiently down one's own symbolic Mississippi River, could find the same freedom and personal growth as he did. In Huck's words:

"The second night we run between seven and eight hours, with a current that was making over four mile an hour. We catched fish and talked, and we took a swim now and then to keep off sleepiness... when we got the raft to about the middle of the river we let her alone and let her float wherever the current wanted her to; then we... dangled our legs in the water and talked about all kinds of things... Sometimes we'd have that whole river to ourselves for the longest time. Yonder was the banks and... maybe a spark, which was a candle in a cabin window... It's lovely to live on a raft.

We had the sky up there, all speckled with stars, and we used to lay on our backs and look up at them and discuss about whether they was made, or only just happened... We used to watch the stars that fell too, and see them streak down... Once or twice a night we would see a steamboat slipping along in the dark,... and by and by, her waves would get to us a long time after she was gone, and jaggle the raft a bit, and after that you wouldn't hear nothing... except for maybe frogs or something... It was kind of solemn drifting down the big river... and we didn't even feel like talking loud."

Henry Thoreau, John MacGregor and Mark Twain advanced a new idea, that small boats could be vehicles for personal freedom and self-discovery. In different ways, they each helped "kick off" the Golden Age of small boating.

Part 2: The Golden Age 1866-1919

Until the industrial revolution and rise of the middle class, small boats were considered working craft. The advent of recreational boating in the 1800s was made possible by: 1) the increasing disposable income and leisure time of the emerging middle class; 2) Low-cost materials and production line building methods made possible by the industrial revolution made boats more affordable; and; 3) higher literacy rates and the advent of mass publishing provided the means of communicating the idea among the new middle class

Early European explorers and fur traders adapted aboriginal bark canoes for their travels in the North American wilderness. The era of the French-Canadian voyageurs ended in the early 1800s, when plentiful beaver and the European fur market both declined. With its commercial use gone, white culture abandoned the birchbark canoe for a time.

Although the precise origins of the "white man's" canoe are unclear, Canadian Thomas Gordon was among the first, in 1866, to adapt the form of the native American birchbark canoe to industrial construction methods. To emulate the light weight of the birchbark canoe, its planks and ribs were shaved far thinner than any preceding type of small boat. As a result, these craft were relatively fragile and short-lived. By the 1870s, several successful commercial builders of this type had emerged to serve the growing new sport, including J. Henry Rushton, R. H. Douglas Boat Co., and Peterborough Canoe Co. These builders also made double-paddle solo canoes modeled on MacGregor's Rob Roy canoe.

The few remaining specimens of this era show elegant design and awe-inspiring craftsmanship. Nathaniel G. Herreshoff, the foremost designer of sailing yachts of this period (and some equally beautiful small boats), once said that the most enjoyment per dollar invested of any boat type would be found in the double paddle canoe. Modern replicas of these early pleasure craft are treated virtually as pieces of art, whereas the originals were then considered as ordinary consumer goods.

The birth and evolution of mass publishing made the Golden Age possible. We take for granted today the benefits of the "Information Age", but in the 19th century there were no electronic media. General literacy and widespread print media were recent phenomena. Mass publishing and advertising were then leading-edge forms of communication, rather like the Internet is regarded today. Two new magazines of the time, *Forest and Stream* (still published as *Field and Stream*) and *Outing* included practical advice and inspirational stories, generating new followers for recreational boating. Newspapers reported extensively on competitive sailing and rowing events in their communities.

Among middle and upper-class city dwellers, "roughing it" became a popular new recreational pursuit as Americans sought respite from their faster-paced, industrialized society. In the European tradition, outdoor tourists of this era typically hired guides to handle the boat, prepare the meals, and manage the gear for maintaining civilized comforts while "in the woods". The much-admired Adirondack guideboat was developed to serve this style of tourism.

Under the pen name "Nessmuk", George Washington Sears wrote a series of articles in *Forest and Stream*. Contrary to the guide tradition, Sears practiced and promoted a new style of outdoorsmanship that included traveling light, self-sufficiently, and often alone. He paddled and portaged various Rushton solo canoes, and his writings helped popularize this type of boat and his self-reliant approach to outdoorsmanship. At Sears' request, Rushton designed and built the original 10'- 6" "Wee Lassie" (model for many modern solo canoes), and later the ultimate small touring craft, the "Sairy Gamp" canoe, at nine feet long and ten and a half pounds.

Outing magazine published many stories of small boat journeys, from tame vacation cruises, to epic voyages. Ten years after MacGregor's Rob Roy journeys, Nathaniel Holmes Bishop made two long small boat cruises (1874-76), and following MacGregor's successful example, wrote popular accounts of both trips. The first journey was from Montreal to Florida's Gulf Coast via the Hudson River and the Atlantic coastline, before the establishment of the Intracoastal Waterway. Most of the trip was made in a rowing canoe made of laminated paper set in shellac, built by the firm of Elisha Waters and Sons. A paper canoe may sound ridiculous, but Bishop's travels prove the toughness and seaworthiness of the concept.

A patent for paper/composite construction was held and jealously guarded by Elisha Waters, whose firm successfully built and marketed paper boats, particularly rowing shells. The concept of paper/shellac construction, that is, multiple layers of fibrous sheets, laminated in liquid resin, and cured into a hardened shell presaged the development of fiberglass composite construction by over 80 years. When the Waters factory burned down in 1876, the company could not recover financially, and their construction method disappeared.

For his second expedition Bishop chose a 13'. decked rowboat intended for duck hunting, called a "sneakbox". In it, he descended the then-undammed Ohio and Mississippi Rivers (in winter!) to the Gulf of Mexico, continuing eastward along the coast to the mouth of the Suwannee River in Florida, the endpoint of his previous trip. Bishop sometimes lived aboard his sneakbox for days at a time without going ashore, an option he lacked with the canoe, and which proved necessary on the latter voyage.

Following MacGregor's example, by the 1870s decked canoes fitted with sails gained considerable popularity. Because of the canoe's narrow and light construction, sail rigs for canoes were kept low to limit overturning forces and minimize stresses on the hull. In order to have adequate sail area and clear the

center of the small boat for crew, the result was the "canoe yawl", a two masted sailboat as little as 13' long.

In addition to casual recreation, remarkable cruising voyages were made in boats of this type. In the pre-automobile era, these boats could be moved overland in the baggage cars of trains or on horse-drawn wagons, and then easily carried to rivers, lakes, and remote coastlines not accessible to larger craft. Much experimentation and design effort was invested in the refinement of this boat type. For example, in 1911 American Frederic Fenger designed his own innovative sailing canoe named *Yakaboo*, steered without a rudder, via a fore-aft adjustable daggerboard. He cruised extensively in the Caribbean, making impressive ocean crossings between island visits.

Then, as now, a few adventurers made rigorous solo voyages, while most boating enthusiasts stayed closer to home and preferred a more social experience. An American cultural trend of the time was the formation of clubs and associations for social, sporting, or political purpose. During the Golden Age, boat clubs featuring sailing, rowing or paddling, multiplied rapidly. Hard as it may be to imagine today, hundreds of such small boat clubs were once a common feature of the American social and cultural scene. Clubs owned boats, boathouses and docks for the shared use of members. Clubs also formed regional or nationwide associations to promote their sport, to organize competition, and represent the interests of members. The American Canoe Association, for example, was organized in 1880, and remains active today.

Traditional working craft were soon adapted for recreational use. The first one-design sailboat class, an idea to permit fair racing among similar boats, originated about 1885 in Maine. Adapted from small skiffs originally used to service large fishing schooners, the North Haven Dinghy was the first one-design sailboat class. A few remain active today.

Dories, long a mainstay of the New England fishing industry, were adapted to recreational sailing and racing, beginning about 1894 in Massachusetts. Having long served the fishing industry, dory builders were highly efficient production line operations. At the turn of the century a new, fully rigged sailing dory could be had for $35, though cheaply made and without frills. Sailing dory design gradually evolved away from its workboat origins, to satisfy customers' demand for comfort and racing superiority. Dory racing fleets were established as far away as southern California. The dory type eventually gave way to newer designs, believed to perform better.

The Whitehall type rowing skiff likewise evolved from a working "water taxi" which ferried people and goods to and from ships at anchor, to recreational use. As steam power and internal combustion displaced oar power in New York harbor, the Whitehall-type craft moved to "The Lake" in Central Park, where it could be rented and enjoyed by families and by young people to casually row about in the company of their sweethearts.

Sometime in the 1880s, a technological breakthrough changed canoeing. In Maine, builders started covering canoe hulls with sealed canvas and paint, rather than the then-standard clinker construction. The use of canvas covering over bent ribs and planking roughly emulated the native birchbark canoe, adapted for modern industrial methods. At that time, deforestation of New England and eastern Canada was so extensive as to make suitable birchbark (that is, from large trees) difficult to obtain. American and Canadian canoe builders like the Old Town, Chestnut, and E.M. White companies and others perfected the design and pioneered the mass production and mass marketing of the wood-canvas canoe. Consumers embraced this tougher and lower-cost product. All-wood construction soon faded from the marketplace, and along with it the double-paddle, solo canoe.

Competitive rowing exploded in popularity with the rise of the Golden Age. Rowing was the first intercollegiate sport (Oxford vs. Cambridge in 1829; Harvard vs. Yale in 1852), and has been part of the Olympic games since 1900. Intercollegiate and inter-club competition was intense. Rowing fans followed the fortunes of their favorite college and club crews in detailed newspaper accounts. Baseball, football and basketball were in their infancies. Rowing had the mass appeal then which these commercial sports enjoy today.

Once a blue collar livelihood, rowing evolved into a professional sport, based on one-on-one racing in single sculls, rather than team competition, as in intercollegiate or club racing. Professional scullers, along with boxers, were the first wealthy sports heros. Rowing and boxing were macho sports attracting macho fans, shady promoters, and organized betting. Gambling and cheating scandals abruptly killed enthusiasm for professional rowing, and tainted amateur rowing as well. The then new game of baseball soon displaced rowing in the public's heart and mind.

Another recreational craze swept through the 1890s, competing for public support with boating. By the turn of the century bicycling surpassed boating in popularity. The two might have coexisted peaceably, except for that precocious cousin of the bicycle, the automobile. Small boats began a decline, mirroring the ascendancy of the automobile. It didn't happen overnight, but by 1919, the Golden Age was over. The Dark Ages had begun.

(To Be Continued)

Sea Turtle!

By Robb White

One time I was trying out a pretty little boat that I had built for this fortunate person. I put a piece of carpet on the transom so that my old ragged outboard motor wouldn't booger up the varnish and took it out on the flats to see how wonderful it was. While I was tooling around out there, I saw this dead sea turtle floating with just the ridge of his carapace above water and his head and feet hanging down like they do when they have fermented a while after being drowned in a shrimp trawl. I eased carefully up alongside him with my paddle so I wouldn't disturb any little fish that were taking refuge in his shadow before I could get a chance to examine them (and so there would be no chance to skin up the paint on old Fortunate's boat).

He was sort of small, for a sea turtle and had a rough shell, so I figured that he might be a hawksbill (the tortoiseshell sea turtle). I floated there alongside him for a long time looking at the little fish that were with him and trying to decide what to do. Hawksbills, never plentiful around here, were very rare even in the early sixties, so I decided to ease him into the boat and take him to Gainesville to Archie Carr. That would do two things, I figured, contribute a specimen of a rare animal without having to kill it and give me an excuse to go see Dr. Carr. Dr. Archie Carr of the University of Florida in Gainesville was the sea turtle man of the world. Not only was he an effective researcher and powerful teacher, he was the most eloquent writer. If you have never read *The Windward Road* and *So Excellent a Fish*, you are in for a treat.

I grabbed the turtle by the sides of his shell and slipped him carefully over the varnished gunwale of the little boat. It turned out the be the wrong thing to do. In the first place, he was not a hawksbill sea turtle at all. He wasn't any kind of a sea turtle, but a common fresh water, alligator snapping turtle (macrochelys temmincki... perfectly described by Carr and Coleman Goin in their *Guide to the Reptiles, Amphibians and Fresh Water Fishes of Florida* as, "A big, dark, long-tailed, big headed and ill-natured brute of a turtle with a hard, fast strike and no color pattern.") and he wasn't rare, he wasn't dead and he wasn't even a he.

I saw evidence of the "hard fast strike" immediately, and cowered to the very stern of the boat with my feet up on the seat. She decided to go the other way and wedged herself under the front seat where she began to tear up the boat. First she bit the carefully carved stem knee into ruin, then she kicked with her feet until she busted the elegant lightweight seat loose from the clamp, clawed the varnish down to the bare wood in about fifty places and bit my tiny precious Danforth anchor so pigeon-toed that the shank could no longer pass between the flukes and the galvanize was popped off in about five places. I tried to rake her out from under there with my carefully scraped and treasured quarter-sawn (by hand) ash paddle and she, with a flip of her big ugly head, bit it half in two. I would have shot her at that juncture if I could have gotten to my tacklebox, but she beat me to it. I wish I had it back.

Years before, when I was working on construction jobs to get through college and support the boat building business, I got laid off for about a long, miserable, rainy week during Christmas vacation. I spent the whole time building this tiny, elaborate wood tackle box. All the compartments had little sliding wood covers and the miniature dovetailed trays fitted together so perfectly that you could turn it upside down and not a single split shot, swivel or narrow hook would get out of place. I was going to send it to my father for a Chrismas present, but couldn't bring myself to part with it right then.

Well, part with it I did, this day. That damned turtle bit it into smithereens in just one snap. All that was left were splinters, little tiny rectangular compartment lids, a snarl of chewed up leaderwire, ruined plugs and bent hooks. I saw my pistol only as a flash as it flipped over the side.

After eating the front of the boat up, she busted her way out from under the seat and headed aft. I went over the stern taking the broken off tiller of the outboard with me where it was hung up in the britches leg of my shorts. She started working on the stern immediately. I couldn't see exactly what she was doing, but the sound was terrible and I recognized parts of the boat and pieces of my gear that were thrown into the water with me. I noticed the drain plug when it went "ploop" right beside my ear.

By the time I could gnaw and rip the cheap (but tough) 70% polyester sleeve off my tee shirt to stuff into the hole, (I started to stick my finger in there, temporarily, while I worked on the shirt, like the little Dutch boy, but thought better of it) the boat was very low in the water. While I was concentrating, she slipped over the side and disappeared.

In a way, it was a good thing and in another, it wasn't. The boat was so low in the water that I couldn't get in without risk of submerging the outboard motor. Without it or the paddle, I would be in a famous fix, not up just a little polluted creek but two miles out there on the flats. So, I started frantically to dip water with my hands. I couldn't even hang on to the boat while I was doing this because, with the motor on there, it was so tippy. I had to keep wiggling my bare feet enticingly the whole time. I hurried up, the best I could, but it was a long, long time before I could get back in the boat.

Then I had to turn the gas tank over and let the water out from under the gas into the engine shroud to avoid contaminating the inside of the boat or the rest of the world. After that, I had to improvise a throttle, tiller handle and choke knob. By the time I finally got back to the boat ramp holding the fuel hose onto the little titty with my cramped left hand and steering and throttling with the high speed knob with my right, it was dark, and I (reeking of gasoline) still had to drive eighty miles to get home.

Something good did come out of this anyway. I couldn't deliver that boat to old Fortunate because I had to paint the inside to hide the repairs and he had particularly specified that it be varnished.. I had to build him another one. I kept the old turtle boat until the plywood came apart.

My Latest Boat

By Robb White

Here is the latest boat. It is a rowboat 16' long and 6" wide and weighs 122lbs. That's my son Wes in there and, though he looks like a boy, he is some 36 years old and the father of a whole slew of individuals. Those oars are Shaw & Tenneys 10' long. The boat is supposed to be an eyeball, over the phone copy of a kind of Scottish fishing boat (all painted grey) like what my customer sees when he is there but is actually just one of my good old eyeball-built rowboats painted grey.

I have built a bunch of 16' rowboats to balance to suit the weight of the owner and I believe I just about have it figured out. The transom needs to just barely clear the water when the boat is pulled to hull speed with the intended load because if the stern is too high or too narrow, without the support of the run of the after part of the hull, the boat will pitch too much with the strokes of the oars and that pitching throws up an abnormally high bow and stern wave which according to the wave-laws of physics increases the distance between them and makes the boat think it has reached hull speed when it ain't. My rowboats also have a good deadrise and easy bilges (don't say "slack") so that while they sit narrow on the water, they row wide. Makes a good sea boat if I do say so myself.

Bitty Kat on the Mystic River, luffing up for the local harbor cruise boat.

Harbor Cat-10

To the WoodenBoat Show

By Greg Grundtisch

After completing the scale model of the redesigned Harbor Cat-10, (see the July 1 issue) and giving it a thorough tank test, I decided to buy the full size kit. Kit builder-designer, Andy Wolfe of Upper Deck Boatshop, entrusted me to build the first full size Harbor Cat-10. This would be the prototype, the test kit, hull #1. So, whatever could go wrong, would, and it would happen to me. Great! I was flattered that he had enough confidence in me to do a proper job, but I was still a little concerned.

There were three main challenges. One, as a confirmed amateur with more power tools than talent, would I be able to complete the boat in six weeks; and get it to the WoodenBoat show in Mystic, Connecticut? Two, could I do it properly and with enough professionalism to want to take it to that show? Three, would the designer be satisfied with the completed boat and want it to be there?

So, with the kit still in the crate on the front porch, and in blissful ignorance of what may come my way, I did not get right to work. Instead I first made reservations for lodging and dock space for the WoodenBoat Show at Mystic Seaport. That's confidence mate!

The next day I began to organize the various parts and glue up some of the panels. Instructions were very easy to follow and Andy was only a phone call, or e-mail away, if I needed assistance. The kit utilizes the stitch and glue building method, something I became briefly familiar with when building the scale model. This is the definitive method for amateurs and homebuilders. It's simple, reasonably fast, (epoxy cure time varies), and the outcome is a much fairer hull than the typical hard chine instant or quick and dirty type boats. The chine edges are sanded, and the thickened epoxy fillets and the layers of glass tape allow for the chines to take on a softer edge. It gives a more traditional look. And a very strong, yet lightweight hull is produced.

The building was much easier than I had anticipated. A great deal of success was built into the kit. Having the parts measured and cut saves a lot of time. Only a few parts have to be cut by the homebuilder; the coaming, deck clamp, and the tiller. The mast, gaff, and boom, came pre-cut, only sanding and finishing required. The sail was included. This kit, as well as others, can be purchased with or without the sails and spars.

Yet, building this boat was not without its challenges. Steam bending the coaming requires building a steambox and reading up on how to do it. This was my first attempt. It was not too diffcult once I got the hang of it. One has to move quickly, and having an extra pair of hands helps a lot. I choose to steam the wood in a piece of furnace pipe with one end capped. I placed this in a fire and poured in the water. I placed the mahogany pieces in and plugged the open end with wet rags, and waited for it to boil.

While clamping on the port side coaming, my lovely assistant Naomi noticed that the steam had turned a very dark grayish color. A word of advice in this regard. Make sure the cap on the bottom of the pipe is completely sealed. The water had leaked out while we were bending on the first piece. The end of the starboard piece came out of the pipe on fire. With the price of Honduras mahogany being what it is, you really want to keep an eye on this sort of thing.

Because it was going to be in the show, I chose bronze hardware for this boat, and I'm still waiting for the remainder of my order from Bristol Bronze in Rhode Island. Buyer beware I guess. There is not too much hardware required, and stock fittings at your local marine store will have what you need for a comparatively modest cost. Same for the halyards and sheet.

A very well made sail came from Stewart Hopkins of Dabbler Sails in Wicomico Church, Virginia. It even has a set of reef points in it. A spritsail is also an option offered for the Harbor Cat.

The week before the show the finishing was begun. White hull, medium blue deck, and mahogany brightwork. Finished bright were the rudder, tiller, centerboard trunk, rubrails, floorboards (cedar), and cockpit. The mast and spars were Douglas fir. I gave them a few coats of pine tar, linseed oil, and turpentine. Then finished with a few coats of varnish. The night before we were to leave for Mystic I was still cutting off the plugs for the screw holes, sanding the king plank and rub rails, and varnishing. At 1am I called it quits and at 7am we were on our way to Mystic, ready or not.

Our arrival at Mystic was confusing as we had been given conflicting information as to where we should launch, and even more confusing information as to where we were to tie up for the show. We just decided to launch at the beach area. This soon proved to be the wrong choice. I unhitched the trailer from the back of the car and walked it down to the water. This was to make sure we didn't get stuck in the soft sand.

The boat was floated off the trailer and secured to a dock by the lovely and talented Naomi. I, on the other hand, could not stop the trailer from going further and further into the Mystic River. I eventually got it to stop, but I was now waist deep, and I couldn't pull it back up the incline, much to the amusement of the observers on shore.

A sympathetic gentleman passing by offered assistance, and eventually we got the trailer back on shore and onto the hitch. There were quite a few good-natured cheers from those who stopped to watch this small engineering feat. I replied with, "that's how we do it in Buffalo, New York, mates".

The hull taking shape.

With the boat rigged and in the water, we removed the trailer and went looking for our dock space. After being told three different locations and having to move three times, we found a space on the other side of the Seaport and close to Upper Deck Boat Shop's display tent. Sometimes things just work themselves out. We were settled in for three days of sailing our new Harbor Cat.

The boat sails beautifully. It's relatively quick in light wind, but it excels when the wind breezes up. We went up and down the river, sailing around the boats the Seaport has on moorings. We sailed under the bowsprits of the whaler, *Charles W. Morgan*, and the schooner *Amistad*.

Andy and his wife Rosemary took *Bitty Kat* out and gave her a professional sea trial, and they seemed to be quite satisfied with the results. We chose a couple of people from the crowd take her out to get an objective evaluation. The results were all positive, and it was also looked upon favorably by those who viewed her out at the dock.

The only problem encountered was with the centerboard. It was a bit too small and allowed for too much lateral drift. This was quickly changed to a daggerboard of larger proportions, and the problem was immediately corrected, and the change is incorporated into the plans for the updated kits. There were some little things that I might add or change, but that goes with any boatbuilding project. There is plenty of room for creativity and adding personal touches.

It is a very fast and fun boat to sail. It's quite roomy and comfortable for a boat this size. It holds two adults easily, and there's room for a child. This kit also comes in 12' version, if you want to bring along the dog too. It's ideal as a trainer or as summer enjoyment for kids, stable, simply rigged with a single gaff mainsail. But you might want to keep it for yourself, it looks good and it is.

This would make for some fun racing if a fleet were to be started. I don't know if it would outrace a Beetle Cat, (maybe the 12' version with the larger sail), but it would sure give it close competition.

We are taking *Bitty Kat* to Sandusky, Ohio for the Great Lakes Wooden Sailboat Regatta and Show. We will be the smallest boat in the race, but we have enlisted the services of Shamus Donagain, a great sailor in his own mind. He will skipper *Bitty Kat* for her first competition, and he will be in it to win it, for sure. I will report the results of this race at a future date.

A final note: I have sailed quite a few little boats since I was a wee lad. From prams and dinghys, to Sailfish and Sunfish, and glorified ironing boards and wash tubs with sails. They all have their strong and weak points, and I'm anything but an expert, but I can honestly and objectively say that this is the most enjoyable and comfortable little boat I've sailed. For a boat this size you could not ask more. It's simply a good boat to mess about in.

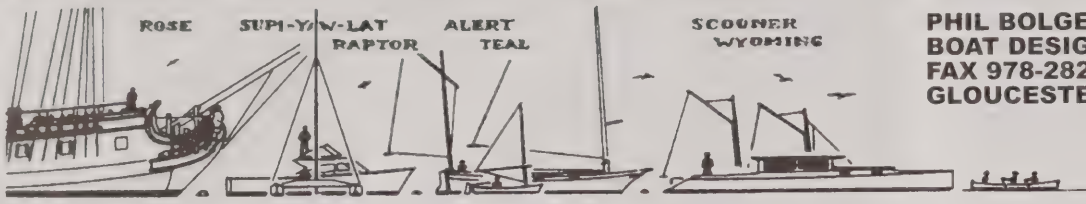
For more information in regard to this boat and the building process, you can contact Andy Wolfe at Upper Deck Boat Shop, 21 Palfrey Ln., Glasgow, VA. 24455, (540) 464-5018, <upperdeckboats @rockbridge.net>, www.upperdeckboats. com

To contact me, amateur for sure: Greg Grundtisch c/o Fantasia Design & Imprint, 256 Iroquois Ave., Lancaster, NY 14086, (716) 681-1315, <grundy@fantasiadesign .com>

Backyard steambending the coamings.

Setting up the rigging.

A really likeable little boat.



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Bolger on Design

The wide Double Eagle is derived from Design #646, commissioned in 1996/7 by Alaskan charterboat operator Fritz Koschmann. For several years Koschmann had mostly daysailed for hire one of our earlier 30' cat-yawl sharpie designs, offering outings into the dramatic shorescapes in and around an Alaskan National Park. Now he was interested in a significantly larger craft to accommodate up to six paying guests plus one or two crew for more extended wilderness exploration.

Attracting clients to come far to experience intact wilderness from the water would require a boat that would offer for up to a week or more basic comforts for up to seven people, viable logistical autonomy, and environmentally responsible operating procedures, keeping the "footprint/impact" of her presence to an absolute minimum. To enhance her utility and the experience of the clients, the craft would have to carry four kayaks or two kayaks and one canoe, where they could be safely stored and readily be launched; obviously handy and necessary would be a stout outboard utility for up to seven passengers, ready-to-belaunched just about anytime. Apart from serving as a charter-cruiser, she would have to support smaller expeditions ashore for sightseeing, birdwatching, hunting or paddling session up smaller streams, and could of course support pleasure diving operations, or scientific work in remote locales.

In light of the client's budgetary limits and construction skills she would also have to be home-buildable, with a straight face, to a budget of materials/outside services of around US $25,000 (in 1997-98) to get her safely underway to pick up clients at the town landing. Preliminary cost estimates confirmed this.

Koschmann did leave her basic hull and rig configuration up to us and the first version of the Double Eagle concept emerged tailored both to his particular functional requirements and efflcient and comparatively stout assembly by any homebuilder.

When Design #646 was published, it caught Robert Norris in the middle of cold-molding the hull shells of a catamaran design of somewhat similar size but otherwise conservative philosophy. He had spent many years ruminating over and fine-tuning notions of his "dream boat" with contacts to us alone going back into the 1980s. We had not heard from him for a long time and as it turned out he had finally begun construction of a popular design.

But in comparison to #646 those plans reflected the by now more decadent catamaran design-practices in terms of emphasizing labor-intensive but shape-restricted hull construction with decided fragility, emphasizing a particular appearance at the expense of practical ergonomics/daily utility, and with disregard to the economics of initial assembly and long-term maintenance, and adhering to narrow dictates of conservative sailing rig geometries versus practical cruising considerations. In essence it suffered from a pervading conceptual deference to attributes of earlier racing machines inherently of limited relevance to the daily rigors of the part-to-full-time live-aboard cruiser.

After a glowing revue of our article on Double Eagle, Mr. Norris purchased a set of plans. Apart from appreciating her overall design-philosophy of focussing on the essence of the task at hand, he expressed particular delight in the proportions and details of her profile, flattering us with art-philosophical perspectives on the various geometries of function and form.

Upon intensive study of plans for #646, he put up for sale the hull shells of the now aborted project and asked us to modify Double Eagle's plans for full-time living aboard on an overall wider beam. Keeping as much of the "original flavor" of #646 as possible, Norris wanted us to incorporate the following attributes into a redesign for him:

Milder climes living aboard for just two, using as much of the available sole square-footage for constant use, meaning limited concessions to additional crew's quarters apart from viable overnighting capabilities.

"Double Eagle 657"

For Robert Norris
Part 1 of 2.

Length on Deck - 39'0"
Length overall with Rudder and Stem Cap - 42' 10"
Length overall with Sheet Staff - 51' 4"

Breadth overall - 20'6"
Breadth on Deck - 20'0"
Breadth Hulls - 4'

Hull Draft on Design Water Line (DWL) - 1'4"
Draft with maximum Rudder - 3'6"
Draft with maximum Centerboard - 4'8"

Height from DWL with Mast lowered - 10'6"
Height of Standing Masthead - 43'8"
Height of Rig with Full Sail - 50'6"

Sail Area Total - 930sf
Main Sail area - 675sf
Jib Area - 176sf
Reaching Jib area - 255sf

Designed Displacement - 14,800lbs
Pounds per next inch of immersion at DWL - 1,400lbs

Fresh Water Tankage Capacity - 210 US gals
Waste Water Tankage Capacity - 130+ US gals.
Propane Tankage - 6x 201bs
House Battery Capacity of 712ah at 12v from 6x2v cells

Fuel Capacity - 52 US gals
Electricity-Generation by 2x13 amp Alternators

Maintaining the general "airiness" of Double Eagle while incorporating a significant on-board book collection, decent office space, a galley for two permanent residents, and one separate guest cabin/workshop.

Ample provisions for "southern ventilation".

A more expansive helm position for two, he initially leaned toward an aft-cockpit helm geometry.

Keeping a viable yawlboat ready to use.

Incorporating his two Yamaha 9.9hp high-thrust outboards for primary drive.

Finding enough deck/rooftop space for growing herbs etc.

Plus the usual interest in enough stowage space for both light and bulky items and enough "down low" hold volume for a realistic amount of water, holding tankage, battery capacity, food provisions, tools etc.

In keeping with the discipline and opportunities of standard plywood dimensions, Design #657 for Robert Norris thus grew by 4' of beam while maintaining her hull shape, length, and beam, her original rig, and most attributes of the profile Norris had found attractive. And we tried to match as much of his wish list as possible with the possibilities of a Double Eagle based geometry.

It might still be a good idea to read the full discussion of the genesis of the original Double Eagle for Fritz Koschmann. But here it shall suffice to offer just some excerpts from our presentation to Koschmann to put Norris' interest and our response with Design #657 into some

context:

Her Appearance: "Her appearance is primarily a function of what your wish-list indicated you need to have. We were not wed to any particular styling fashion, but had function, ergonomics, and home-buildability essentially dictate her profile. Only then did we try to take "the edge off" of what could easily have been an even boxier proposal of probably offensive blandness.

From a traditional aesthetic perspective the inherent styling problem in designing catamarans lies in the fact, that for purposes of structural integrity and "ride" in a seaway, the bridge that connects the hulls has to offer at least 2' vertical clearance between its underside and the waterline. Allowing the necessary standing headroom imperative for the comfortable use of the generous space, Double Eagle's height immediately measures a significant 10' from the waterline to the top of the wheelhouse on just 40' of hull-length.

The other issue that is inherent in catamaran design is the matter of the two hulls. You can capitalize on them or try to hide them.

Looking at Double Eagle in profile, the challenge thus lies in visually interrupting the ergonomically necessary structural expanse, distracting the eye from the bulk, while actually maximizing the opportunities thus emerging.

Over an extended period of time we discussed different styling opportunities in-house, and, after much back-and-forth, decided to pursue this thoroughly untraditional silhouette. With her layout concentrating her vertical expanse amidships, these gentle curves make her enclosed volume look much less angularly massive and are echoed throughout in the shape of windows, moldings, and rub-rails, all combining to dramatically lessen the impact of her actual bulk; not to mention that bending hull panels has structural advantages as well by adding stiffness.

Not "roofing over" the bows with more super-structure keeps them visually and structurally lighter, while offering functional advantages below and above decks. These "light" bows can thus well support the greater visual mass amidships, even that unexpected but very functional "phone booth" type wheelhouse.

The tall, narrow-framed glass area, that cuts away so much visual weight amidships, both matches necessary vertical structural members and produces the desirable airy interior that allows near 360degree field of vision when your clients are forced inside again, due to another cold-front, or just "man-eating"' horse-flies.

Her "shorter" sterns, then, are balanced by the bows, the gallows, the rudder's vertical size, the A-frame sheet-staff, and the main-sail shape."

Her Rig: "Double Eagle carries up to 930sf of sail on a short single stayed and tabernacled mast of just 40' length, two welded 20' sections of 8" sched. 40 pipe. The mainmast is stayed with six shrouds four of which carry ratlines for fun and scouting for whales. An A-frame of two 4" 20' aluminum pipe sections, rooted in both hulls and supported by the gallows across the yawlboat bay, controls the mainsail sheeting and reefing system.

The point here is to get a lot of sail-area on a short mast, reducing top-hamper, drag, and first cost. This allows for more sail area lower, and to run more of it longer before things get risky on a catamaran. And of course, you have to be able to readily singlehand her repeatedly during a day's sail, starting in the morning by setting the sails, then putting reefs in, shaking them out, lowering the rig for lunch/beaching, raising it again for the second leg of the day, etc. Finally, the shorter mast set in a stout tabernacle allows ready laying of the mast within minutes and just with onboard gear to avoid unnecessary drag on her open water mooring and unnecessary noise while trying sleep through a blow; powering up a remote river this would also avoid getting the mast-top snagged in overhanging trees, not to mention the obvious advantage in negotiating all but the lowest bridges.

Double Eagle should be perfectly sailable with just the mainsail alone, making her a cat-catamaran. It is a so-called Chinese gaff of 675sf which combines the better aerodynamics of the western gaff rig with the better control and reefability of the eastern Chinese lug rig. It allows rapid and reliable reefing for low-drama adjustment of sail plan to changing wind conditions.

While in tighter environs with many variable angle tacks, the boom sheet alone is used, longer runs on one tack would justify low-strain adjustment of the upper sheets to achieve the best sail shape. And tacking to a certain regular angle allows leaving the adjustments untouched. Thus seeing three sheets indicated on the study is not as "wild" as the sheer number would suggest. With each sheet controlling never much more than around 300sf of cloth, the strains are low, and the promise high of a great sail shape that is not derived from massive stresses generated by sizable boom vangs for instance.

Overall, this rig has limited strains necessary to its function. Notice for instance the lack of permanent backstays under the assumption of the stout mast pipe below the tabernacle pivot point distributing the stresses running to the forward bulkhead; with running backstays for serious surfing/jockeying if so inclined.

Notice that under these conditions, a significant part of the typical stresses on the mast is actually taken by the sheets and thus the sheet-staffs-frame. Yes the jib(s) would still sag some, but that would not matter on that course; to get more tension into the headstay(s), the running backstays would help.

And notice that there is no exotic hardware required for a proper set up; her boom, laminated battens, and gaff all have simple jaws to engage the mast with simple parrels on the forward end of them. There are no tracks, no batten-cars, or other fancy stuff that "modern" full-batten rigs dictate. Two smaller winches would make hoisting the mainsail easier.

The optional jib(s) could be anything used. The larger of the two, 255sf fitting the two shown geometry more or less, and to be set during light air episodes off either one of the two mast fore-stays; weather side might be preferable depending on course. The smaller 176sf could be set in stronger winds going to windward to complement the main's aerodynamics.

Notice, finally, the location of the mainsail's sheets, its reef-lines, and its winches, all clustering within immediate reach from the helm. There are no acrobatics on a wet and slippery house top just to tie in a reef, drop or raise the sail again. The jib is an on deck proposition, but well-protected within the railings, "going forward"' would only offer nuisance from bow-spray.

With you in the wheel-house, and your guests well protected and in safety behind you in the saloon within immediate earshot, even a nasty blow should not be too dramatic for all concerned. Their relative position to the boat's probable axis of movement is highly desirable, while you are up front, with no uncertainty of what lies in your path or whether the anchor is still holding."

The Structure: "Double-Eagle's proportions are a sensible mix of our thinking on desirable multihull attributes and the economies offered by integrating stock plywood dimensions into all aspects of the design. The point is to build capable shapes fast, stout, and with limited tedium.

We've never held with the notions of elaborately sculpted super-skinny shapes out of expensive materials, that can neither carry any useable weight, nor won't tack too well with all that long slender body resisting any tighter turns. Usually they are fiendishly elaborate and man-hour intensive to build, and are still way to fragile for any really plausible daily close in coastal use such as yours; we see advertised from a known multihull designer a 56' catamaran with 9mm wall-thickness (3/8"). If the fabulous speed of these machines is only possible by "cruising" with a single suitcase per person, the constant risk of holing from even smaller flotsam, and living with high stress and high cost rigging, the question arises about where you can go this fast, with that little endurance, through what waters where nothing stands/floats in the way? Many multihulls look as though they have been designed under the assumption that the owners are to "live ascetically on the edge" as a matter of typical holiday leisure and fun.

Double Eagle is more like those fewer catamarans that are more relaxed, stouter, and no doubt slower, but still faster than similar sized monohulls, while offering a multiple in useable volume and comforts. Since she is of plywood, she should still be lighter, stiffer, and cheaper to build than her distant FRG cousins.

Her hulls are essentially 5 sheet/4 butt propositions of 39'+ length without the stem-cap/profile added to the bows. The hulls' 4' beam allows shallow overall immersion of her weight, shown at 15" draft at around 15,000lbs, which allows her to carry an honest cruising load of water, fuel, food, accommodations, and toys to have fun on the vacation; rather than enduring some "sporting" exercise in the ascetic lifestyle of the "manic speed-demons".

The hulls offer well over 9:1 length to beam ratio, on a bottom with enough rocker to allow spinning her through stays reliably. To keep her quieter when at anchor, we've added to the outside of the uninterrupted bottom a "Vee-Nose" under her bow. In the worst case scenario that "nose" could be cracked from impact bouncing off a rock or misjudging that beaching adventure, without her taking on water. It is essentially sacrificial, epoxied and taped to the bottom after the hull is more or less complete and ready to be turned right-side up for assembly of the bridge and cabin.

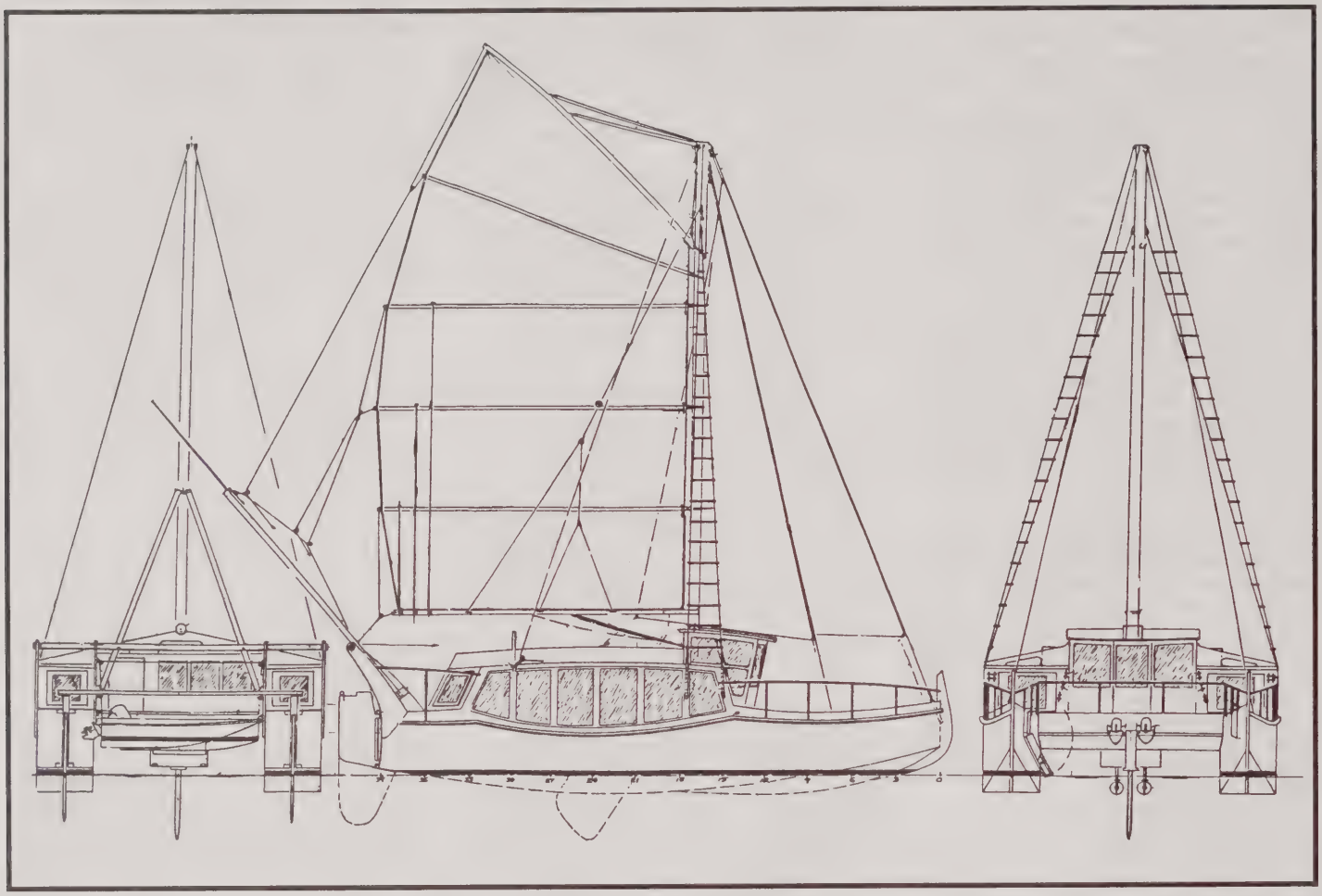
Assembly of these hulls should proceed rapidly, upside down over the partial bulkheads, with a horizontal seam at 4' above baseline to maximize the plywood's advantages, while allowing a top-down approach to

other hull for you to line her up straight and plumb. We try to arch plywood where possible to reduce necessary stiffening supports, and there is 2" building foam for large panel stiffening and thermal advantage in the roof sections. Most of the cuts in her are straight, typically involve no beveling. And most bulkhead/framing angles are 90degrees. Progress to close her in should be rapid and motivating.

Her windows are a mix of polycarbonate and laminated glass, and certainly constitute a significant cost, though probably not more than any smoothly finished surface of any material used to enclose this volume. And since this glass house concept obviously has great ergonomic advantages, fretting over glass cost should be outweighed by them anyway.

The tankage in both hulls is structural for further labor saving, effectively producing a double bottom in that area. And without any ballast apart from the six 2v (=12v) battery-bank totaling 720ah, she is of course unsinkable."

(Next issue we'll go into the particulars of Robert Norris' version, Double Eagle 657.)



DreamBoats
The Deadly Dance

By Richard Carsen

All of us have likely seen and admired a beautiful picture of a Tea-Clipper under full sail, flying before a following wind. Who hasn't wished he/she could be on board? You can just feel that ship, rushing almost soundlessly through a luminous sea, rising and falling with the endless swell on an endless ocean.

They were small ships, maybe 500 ton, exquisitely designed and just as exquisitely handled, by master-mariners and their NCOs who had come to the very peak of their respective skills.

Those who designed them had produced works of art; as with most pieces of art, they were low in practicality, but sublime in raising the passions of ordinary men, or at least that's the way it was supposed to be. The passions raised, however, were not the contemplation of sheer beauty and virtue in rapturous admiration; the passion that they aroused was for the instant achievement of wealth and fame, prospects for an instant retirement without the worry where the next meal was going to come from. The tea cargo that landed first at the London docks, would be worth its weight in gold with all the promises such visions have always held for man.

The Tea-Clipper was born from competition, hard as nails competition, no holds barred. The Age of Reason had raised its ugly head. We have read, or seen in the movie, what went on on the *Amistad*. We may have read Jack London's *The SeaWolf*. What we read about was not the exception, but the rule, and not just at sea. Modern teaching of economics has not changed. The only and final measure for anything is the bottom line; everything else has to be sacrificed to this Moloch; the men who ran the clippers were no different from other men.

The Clippers were sailed to China with skeleton crews. These would be the trained backbone of the return journey. In China a large crew of derelicts, misfits, low-lives and outright criminals, were shanghaied from bars and dives by professionals for money. Clippers used to lose as much as one third of their crew on the home-bound journey. If you deduct one third as the original skeleton crew, it means that about half of those shipped in China would never reach the end of the voyage. To stop for a man-over-board was simply unthought of, nothing would stop the mad onward rush of the ship but a lack of wind. This side of the story, as told by some of those who did survive and were able to write about it, is just not a pretty tale. So before wishing you were aboard, think again.

Yet the other side of the coin is magnificent and worthy of being preserved among the best in the annals of our history. From the fine-tuning of a design by a master-designer, to the fine-tuning of the craft in its totality under all and every condition the sea could, and would, mete out, the master and his NCOs played a deadly game, a deadly dance, walking the fine line between the utmost possible and disaster, knowingly. These were not ships with thousands of tons of outside keels, these ships could go over, with no chance of recovery, and all the main-players knew it.

From the moment the designer started to refine his lines, weighing the balance of all possible forces under all possible circumstances, until the moment of a final call out there a thousand miles away from land under the ultimate conditions of sea and wind, it was one long gamble,based on highly honed skills, and as much luck as one hoped to be able to gather in a lifetime. These craft could not just turn over; they could be driven under by too great a speed. They were not planing vessels.

The mentality that was presented by the *Seawolfs*, *Amistads* and Tea-Clippers of those days, persists. Now we have multi-nationals, gearing up to plunder the land and people of impoverished third world nations. But the skills and intuitions of designers and masters persist too, albeit in different fields of endeavour, sports, for instance. Maybe one day we can have the one without the other.

How to Make A Wooden Propeller

By Philip Thiel

The following notes describe a method for constructing a propeller of epoxied laminations of marine-grade plywood, suitable for the low power and rpm of human-powered watercraft, and within the capabilities of one competent in elementary geometry and basic woodworking. We will illustrate the procedure as applied to the making of a three-bladed "right-hand" propeller, one which rotates clockwise in driving the boat ahead when viewed from behind the boat, with a 16" (400mm) diameter and a 24" (610mm) pitch, based on the Troost B3.35 model of 0.35 developed-area ratio to absorb 1/5hp (150 watts) at 240rpm and produce about 13lb (58 N) of thrust in open water at 4.2 knots (2.2 m/s) with 80% efficiency **(Note 1)**. The same procedure, of course, may be used for the construction of propellers of similar characteristics and other dimensions.

As is the case with most propellers, we will use a helicoidal surface for the "face", or after side, of the propeller blade. This helicoidal surface is generated when a straight line (the "element") revolves with uniform speed about an axis through one of its ends and at the same time moves with uniform speed parallel to itself along the axis. Any point on the straight line then generates a curve in space called a helix, which lies on the surface of a co-axial right circular cylinder. This distance along the element between the axis and the given point is the radius, r, and the distance this point moves parallel to the axis during one revolution (360 degrees) is the pitch, H. The successive positions of the element constitute the helicoidal surface.

If we unwrap one of these co-axial right circular cylinders and lay it out flat, the helix it contains will appear as the hypotenuse of a right triangle whose base is the circumference C of that cylinder (C=2pir) and whose altitude is the pitch H. The angle between the hypotenuse and the base is the pitch angle x, whose tangent is H/(2pir).

Assuming a maximum blade width of 4" (102mm) at a radius of 5" (127mm) **(Note 2)**, a 2-1/2" (63.5mm) diameter hub, blade thickness of 3/8" (9.5mm), 5/8" (16mm), and 3/4" (18mm) at tip, maximum width, and hub, respectively, and 1/2" (12.7mm) plywood, we

Laminated plywood propeller, 16" diameter x 24" pitch.

can start to determine the pattern for the blade laminations as follows.

First, calculate the pitch angles at the radii of the hub, of the point of maximum blade width, and of the blade tip. These are:

tan x (hub) = 24/(2pil.25) = 3.0564 x (hub) = 72degrees

tan x (max) = 24/(2pi5) = 0.7641 x (max) = 37.5degrees

tan x (tip) = 24/(2pi8) = 0.4776 x (tip) = 25.5degrees

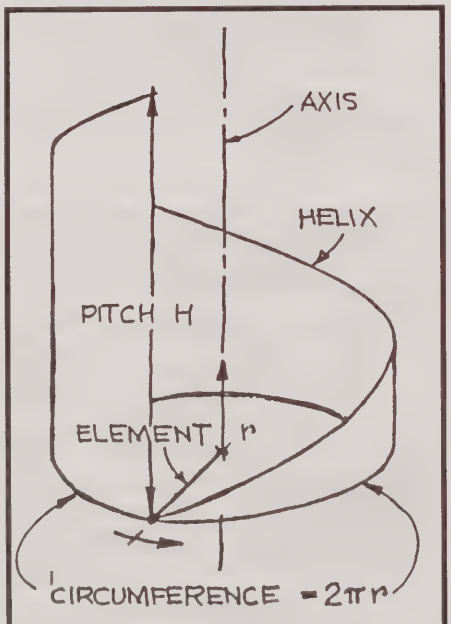


Figure 1. Helix

Next, draw a series of seven straight horizontal lines 20" (500mm) long on a sheet of drawing paper, exactly 1/2" (12.7mm) apart. About 2" (50mm) from the left on the bottom line locate three points about 5" (130mm) apart. These points represent the straight-line element which will be the trailing (after) edge of the propeller blade. At the left element-point, draw a line at the hub pitch angle of 72degrees; at the center point draw a line at the maximum blade-width radius pitch angle of 37.5degrees; and at the right draw a line at the tip pitch angle of 25.5degrees. These inclined lines are the hypotenuses representing the blade face at each radius.

Above and to the left of the hypotenuse for the pitch angle at maximum blade-width, lay out maximum blade width of 4" (102mm), and the blade thickness of 5/8" (15mm), as shown in the figure. The enclosing rectangle will then determine the required number and required width of the plywood laminations on each side of the trailing-edge element at this radius. A similar procedure, for the same number of laminations and specified blade thicknesses, is followed at the hub and tip to determine the plywood dimensions on each side of the element at those radii.

We are now ready to make the pattern for the blade laminations. On a sheet of tough, thin cardboard, draw three concentric circles at the hub radius of 1-1/4" (31.75mm), maximum blade-width radius of 5" (127mm), and tip radius of 8" (203mm). Then draw three radii at 120degrees, which will be the trailing edge elements of the propeller blades.

Taking each radius in turn, lay out the lamination widths we have just found, at the appropriate radial distances from the center, along the arcs. To be precise, these distances should be laid out along the arcs, but measuring them as chord dimensions here will provide a little extra margin for the plywood. Connect these points with smooth, fair lines, and we then have the pattern for the laminations. Carefully cut this out of the cardboard, "saving the line", and check for interblade uniformity by tracing each blade pattern one on top of the other on a piece of paper to see if they coincide.

Use this pattern to lay out the required number of laminations on a sheet of 1/2" (12.7mm) marine-grade plywood ("marine" because this grade is less likely to have internal voids than in common plywood). Be sure to carefully locate the center point in each case. The patterns can be interfingered on the sheet to minimize waste. Use a sabre or band saw to carefully cut out the laminations, again saving the line, and then carefully drill each for a 3/4" (19mm) diameter propeller shaft.

The next step is to make the assembly platform, exactly 16" (406.4mm) square. The same 1/2" (12.7mm) plywood may be used, solidly mounted on a 1-1/2" (38mm) thick frame on the underside, and with a block 1-1/2" (38mm) thick by 4" (100mm) square underneath in the center. This should be drilled carefully for a 3/4" (19mm) dowel, perpendicular to the platform and extending 6" (150mm) above it. Taking each lamination in turn, place it over the dowel on the platform and, using its outer edge as a guide, sand off the tip of each blade to a uniform 8" (203mm) radius.

Before we assemble the laminations we must prepare three jigs to insure their proper positioning while being epoxied together.

This May Be Heavy Going.

There's more to propellors than meets the eye. Long time pedal power proponent Phil Thiel published this article in *Human Power, the Technical Journal of the Human Power Vehicle Association* (for which group he was for many years the waterborne vehicle chairman) in their Winter 1990/91 issue, Volume 8 Number 4.

With winter coming on, I thought perhaps this might catch the attention of any readers who find pedal power intriguing, and who are able to comprehend the mathematics involved, as a unique shop project. I'd be interested in hearing from any of you who do seize upon it as a challenge. (Editor)

If the HPVA sounds interesting to you, they can be reached at P.O. Box 1307, San Luis Obispo, CA 93406-1307, (805) 545-9003, <hp@ihpva.org>

These jigs are made of thin, stiff cardboard (manila file folders will do). Each consists of a strip of width of the same number of 1/2" (12.7mm) laminations as the propeller itself, and cut to a step-like profile identical with that of the lamination-blanks at the blade tips.

The next step is to make a trial assembly of the laminations on the platform. Position the helicoidal-surface up on the dowel, with each blade having the trailing-edge element at the left, and the laminations rotated clockwise from the top down to the platform in accordance with the tip-jig used as a guide on the outer surface of their tips.

When all is in order, remove them from the platform, rub the dowel thoroughly with some wax and cover the platform with a sheet of waxed paper cut to fit over the dowel. Now start the epoxied assembly, being sure each successive surface is completely and uniformly coated, and carefully positioned with the aid of the jigs pinned around the outer surface. Place the same amount of weights uniformly over each blade-stack while curing.

A wood rasp is the best tool for the initial removal of the corners of the laminations down to the helicoidal surface of the face of the blades, followed by progressively finer wood files. In doing this, note that all the plywood laminations should be kept as straight radial lines. Do not deal with the other side of the blades at this time. With the helicoidal face of the blades thus roughed out, we can now turn our attention to the outline shape of the blades themselves.

To make a pattern for the blade profile, we will fit a piece of thin, tough cardboard to the present fan-shaped surface of the blade face. Since the helicoidal blade surface is three-dimensional and the cardboard is two-dimensional, it will not lie flat, but the difference is not too great and the approximation is reasonable.

Align a straight edge of the cardboard with the radial line of the trailing edge, and by cut and-try, fit the inner edge of the cardboard as close as possible to the curve where the blade surface meets the hub cylinder. (Note that the length of this line equals the length of the hypotenuse at x(hub) = 72degrees: In our case, 3-1/8" (79.4mm). When this is done, lay the cardboard flat and spot a series of points about 1/2" (12.7mm) apart along this line. Using them as centers, and a compass setting of 3-3/4" (95.25mm), the radius at maximum blade curvature, 5"; minus hub radius, 1-1/4", draw a series of arcs on the pattern. A smooth curve across their tops will be the intersection of the cylinder of 5" (127 mm) radius with the helicoidal surface.

We must next lay off the required blade-width along this line. To do this take a strip of paper and layout the required blade width of 4" (102mm) along one edge. Then place this edge outside, on the convex side of the above curve, with one endpoint at the straight trailing edge and tangent to the curve and, in essence, "roll" this edge along the curve. This is done by using a sharp pencil-point pressed close to the edge of the strip as a pivot, and rotating the strip just a bit to a new point of tangency along the curve. Holding the strip in this new position, the pencil point is shifted a bit further along the strip, and the strip again rotated to a new point of tangency. This process is called "ticking off" the length along the curve, and obviously the closer together the successive pivot points, the more accurate the transfer of the dimension.

Turning our attention next to the tip of the blade, draw in a circle of 1-1/4" (31.75mm) diameter tangent to the straight-line trailing edge and tangent to a line perpendicular to it at its end. A fair curve drawn through the end of the hub intersection, the point of maximum blade width,and tangent to the last-mentioned circle will be the profile of the leading edge of the blade. This pattern is then cut out and used to trace the outline on each blade, being careful to keep the straight edge in line with the trailing edge, and the hub cut-out snug against the hub. Use a coping saw to trim the wood to this profile.

At this point, we can turn the propeller over and rasp off just the corners of the laminations on the back surface of the blades. Before we can proceed with the final shaping of the blade sections, we need to make one more template, that of the blade-section at maximum blade width.

This will be an airfoil shape, whose heights ("ordinates") above the straight line face of the blade, at ten equally-spaced stations along the blade width or "chord", are shown first as percentages of the maximum blade thickness at this radius (in our case, 5/8" (16mm) and 5" (127mm), respectively, for a chord length of 4" (162 mm), and then as inches for our example.

Thus, the next task is to carefully lay out this blade-section profile on a sheet of tough, thin cardboard and cut it to shape. The cardboard is then trimmed to the form shown in the figure and mounted perpendicularly around the edge of a 10" (254mm) diameter disk of 1/2" (12.7mm) plywood, which fits over the 3/4" (19mm) dowel on the assembly platform.

With the propeller helicoidal surface face down on the platform, use this jig to check your profiling of the back of each blade at the 5" (127mm) radius. When this is done, rasp and file off the rest of the blade surfaces, using the radial lines of the plywood laminations as guides to produce a smooth, fair surface based on this key section. The tip of the blades

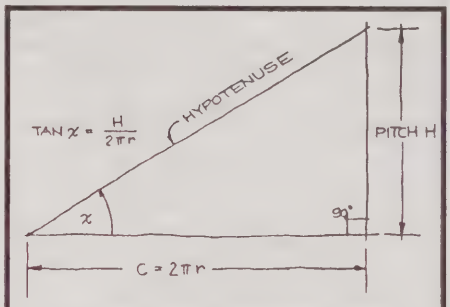


Figure 2. Pitch angle x @ radius r

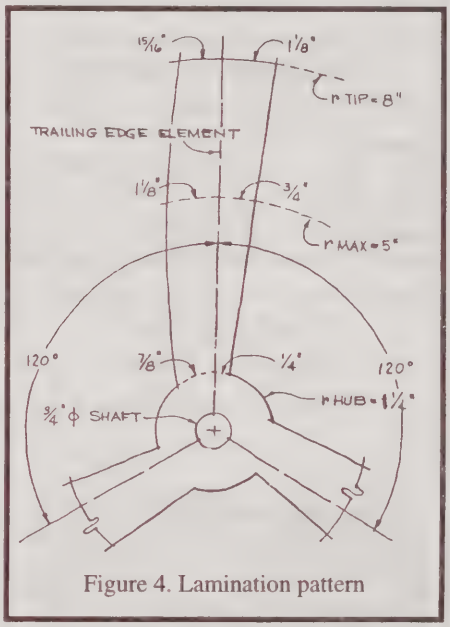


Figure 4. Lamination pattern

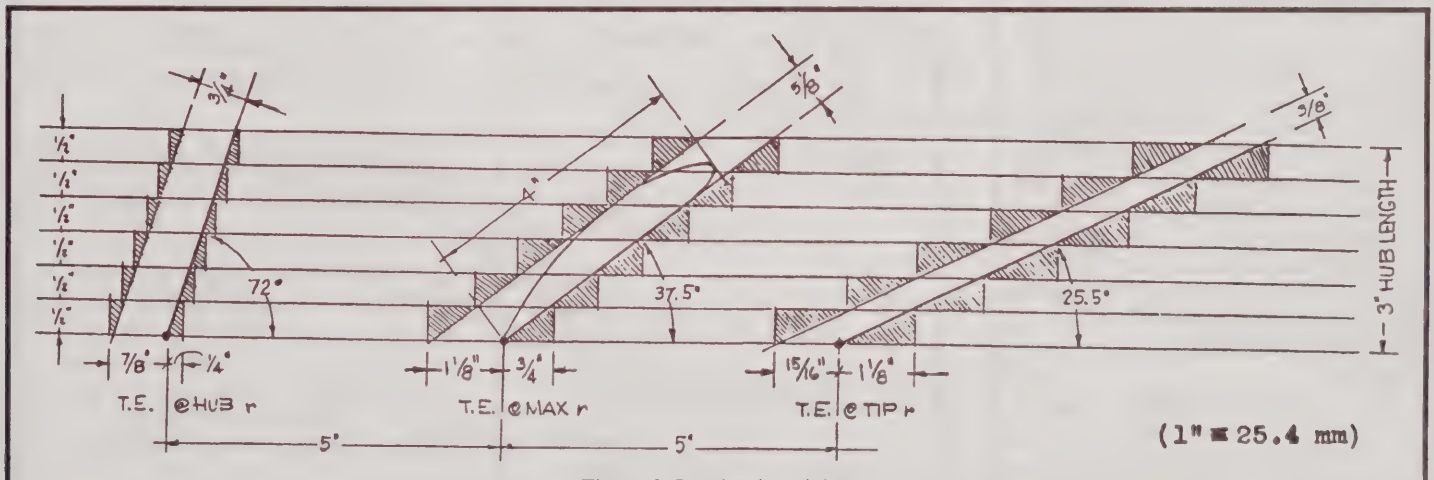
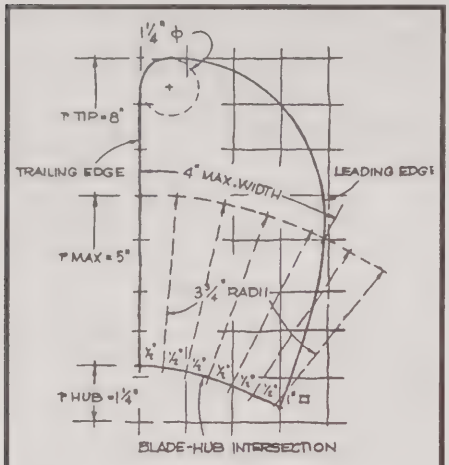


Figure 3. Lamination sizing

should be trimmed to about a 1/8" (3mm) radius. The final step is to form the curved part of the blade face at the leading edge, and then the surface of the entire propeller is smoothed off with progressively finer grades of sandpaper.

The last step is to paint the propeller with two coats of epoxy, sanding after each to end with a very smooth finish. Be sure to epoxy the inside of the bore for the propeller shaft, too. The propeller can be secured to the propeller shaft by means of a roll pin through the hub and shaft. If desired, a tail-cone of laminated plywood can be epoxied behind the hub.

If the propeller becomes damaged in use, it may be easily repaired by cutting out the affected area to reach sound material, and filling in the void to the original profile and contour with a stiff paste of epoxy and fine sawdust. A subsequent filing and sanding to the original form completes the repair.



Figuer 5. Blade pattern

Notes:

1. According to DeLong, an "average" person can sustain an output of about 0.225 hp (170 watts) over a one-hour period, with near maximum efficiency at a pedal speed of 60 rpm. Assuming a mechanical efficiency of 0.9 and a gear ratio of 1:4, this results in 0.2 hp (150 watts) and 240 rpm at the propeller. The Troost B3.35 model is a high-efficiency pattern with good acceleration characteristics, suitable for an all-weather cruising boat. As embodied here it differs from the original with the elimination of the 15-degrees-aft blade rake, and a slightly thicker blade section.

See: Fred DeLong, *DeLong's Guide to Bicycles & Bicycling*, Radnor, PA: Chilton Book Co., 1978; and L. Troost, "Open Water Test Series with Modern Propellor Forms", Newcastle, GB: *Transactions of the North-East Coast Institution of Naval architects, 1950-51.*

For an accessible introduction to the details of empirical propeller design, see Dave Gerr, *Propeller Handbook*, Camden, ME, USA: International Marine Publishing Co., 1989.

2. To give a developed-area ratio of 0.35. The developed-area ratio (DAR) is the true area of the blade (not the projected area) times the number of blades; divided by the disc area of the propeller, or pi R squared where R is the radius of the propeller.

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(Philip Thiel has taught naval architecture at M.I.T, and architecture at Berkeley and at the University of Washington in Seattle. His interest is in facilitating do-it-yourself construction of pedal-powered cruising craft. In future articles Phil will present several of his pedal powered designs).

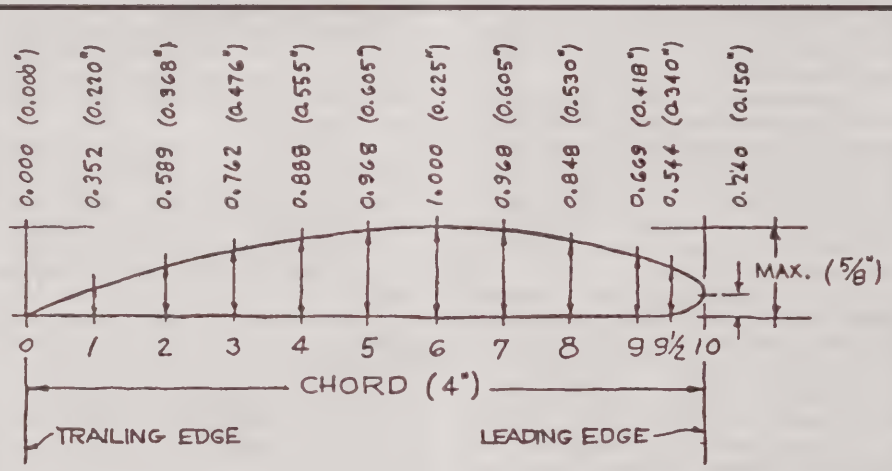


Figure 6. Blade section @ max. width

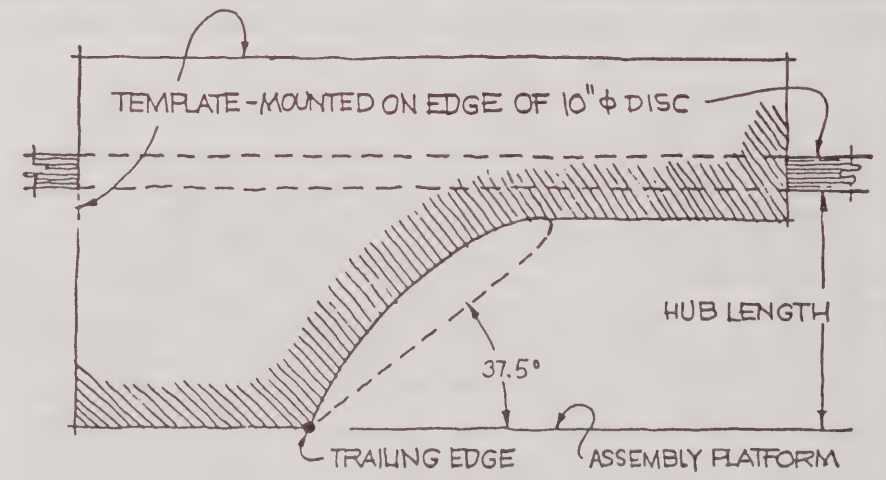


Figure 7. Blade section jig

ISCHU Drive

By Irwin Schuster

Recent rant regarding recumbent rowcomotion caused me to dredge up a dormant scheme which, it is becoming obvious, even to me, isn't going to come to fruition through my own efforts. Maybe sombody else will take a crack at it.

The idea is fundamentally an outboard, pedal-powered rig. First, the reason for doing it; I like to see where I'm going. I haven't used my Alden Ocean Shell since a sailboard cowboy ran up onto it inches from my kidneys a few years back. Rowing backward, I couldn't see him, and I (charitably) believe he couldn't see me.

Now that bicycle drives have crossed the English Channel by air, and the Atlantic by sea, all continents by road (as well as the Boston Public Garden's pond by swan), the concept is pretty well proven.

Pedaling vs. Sculling/Rowing (sculling as in rowing a shell, not as in standing with single oar)

- Supine position reduces body windage, minimizes back strain, is more comfortable.
- No oars eliminates oar loom windage.
- Constant thrust - maintains hull speed.
- No sliding seat motion - eliminates disruptive hull pitch action as weight shifts fore and aft.
- Hands are free for scratching, sweat mopping, fishing, course plotting, steering, adding and/or removing clothing, drinking, waving, bailing and other maintenance of self and craft.
- Also, no twisting about is required to assess direction and traffic in your path, minimizing weaving and course correction.
- It is less technique-sensitive, easier to reach competitive level.

In short, I suspect that a well designed pedal boat would be equal to or faster than a shell over a course.

Other advantages:

- For gunk-holing; no 8' to 16' or so of "beam" that oars and double paddles require.
- For wildlife observation; quieter, without the flash and splash.
- Like rowing, this is a low impact sport, with a good age range.

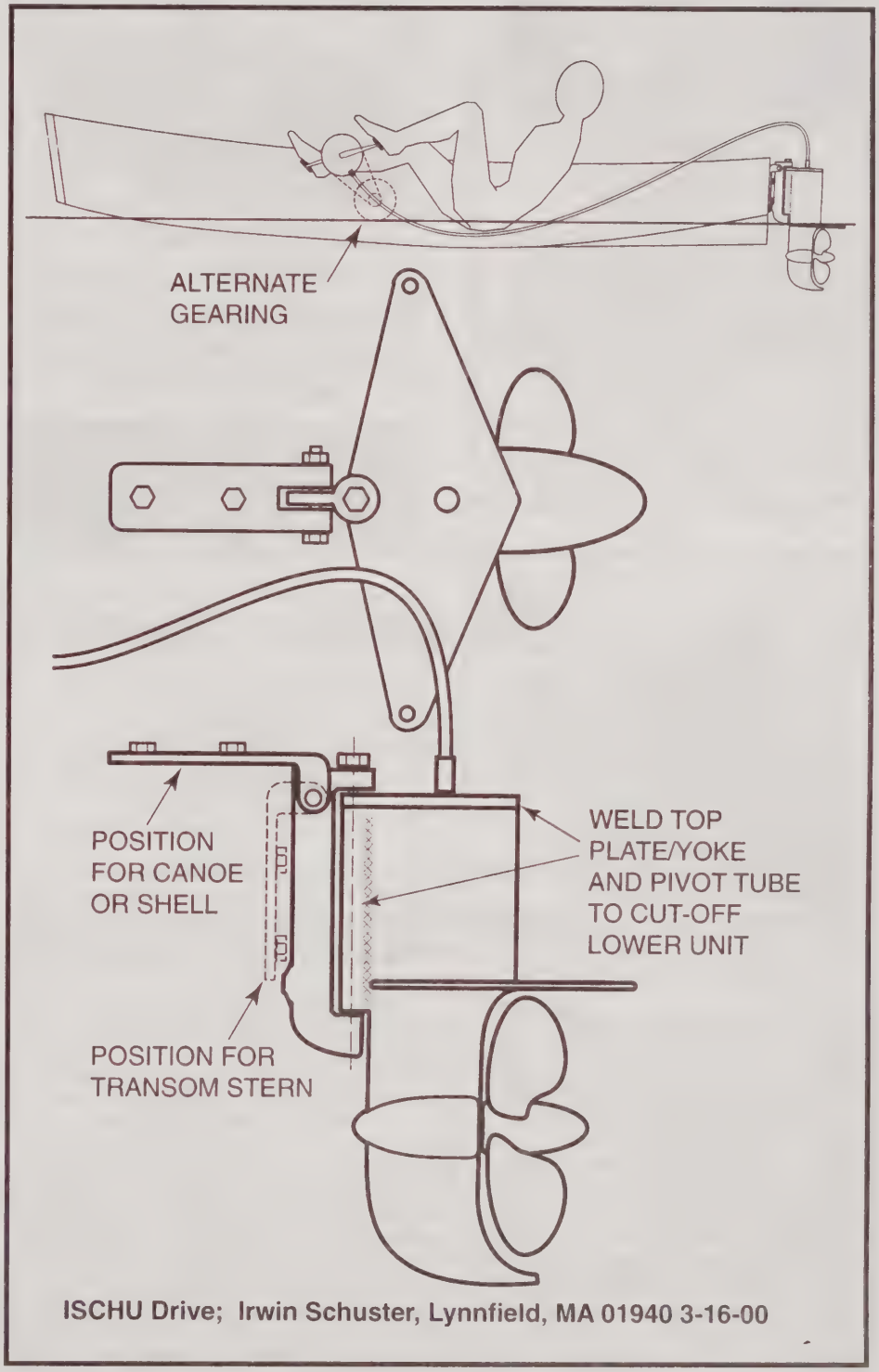
Mechanics: As one can quickly recognize, the basic input drive mechanism is proven and simple, a modified bicycle frame and simple gearing (analogous to a hand-drill). It doesn't seem to me that gear changing is needed. The output drive I conceive is the lower part of an outboard, modified to attach to the hull on a kick-up pivot, and steerable.

Here's the secret. Between the two is a rotary, flexible cable attached to the vertical shaft of the outboard drive. This should achieve up to about 500-700 rpm with ring and spur going into the vertical shaft of the lower OB unit. 2000 rpm could be achieved with additional gearing. Steering could be by shaft to a horn on the lower OB unit, or normal yoke and cable to a tiller.

So, we have a self-contained power unit, a clamp or screw-on drive unit and a flexible shaft between them with no through-hull fittings, adaptable to virtually any hull configuration except for kayaks which will not normally have the cockpit size required. Shells can be accommodated by adding closed cell foam rubber sponsons attached to the hull to add stability and a little beam. Resting/coasting is impeded by prop drag, and that could be addressed by a clutch which would allow the prop to free-wheel (if you wanted to get really fancy).

The concept is ideally suited to home designed-builts, because hull design is not critical, no through-hull, CG is very low, weight and stresses are low, and flotation requirement is minimal. But high-end, hydrodynamic potential for racing or super-aerobics also exists.

Irwin Schuster, 27 Chatham Way, Lynnfield, MA USA 01940-1253.



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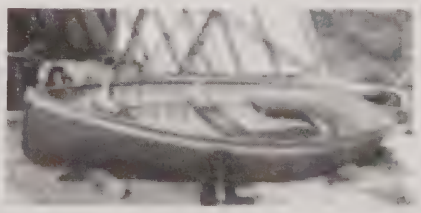

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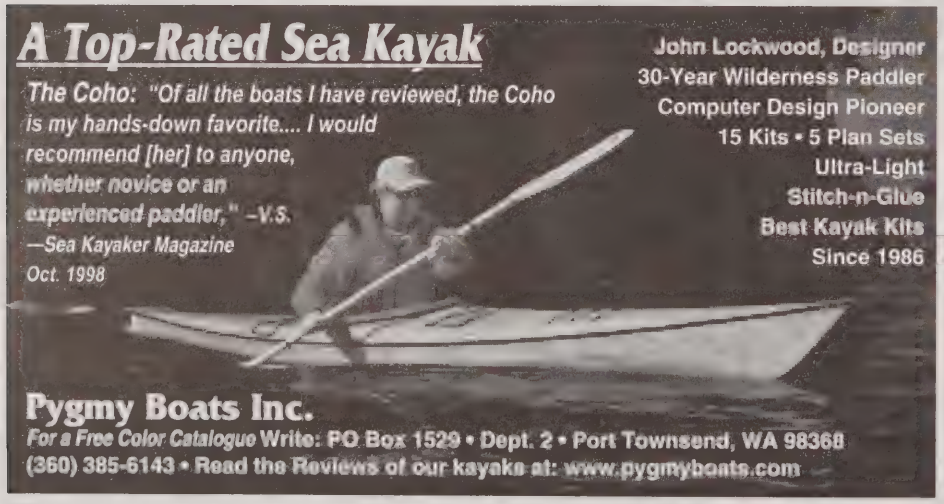

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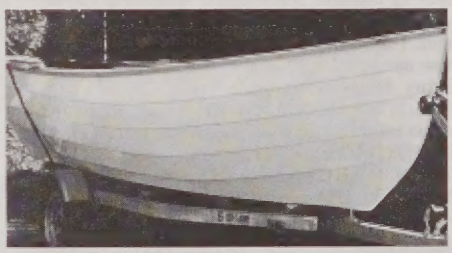


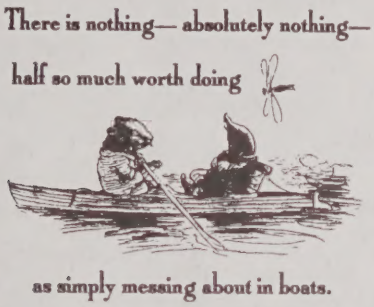
16' Amesbury Dory, by Stur-Dee Boat Co. of Tiverton, RI. Purchased '98 new, never been in water, still new. White lapstrake hull, all FG constr. Bright work incl oak gunwale, mahogany finished steering console, 5 mahogany seats, bow cap and 2 horizontal reinforcing corner knees at 22" deep transom. Transom takes long-shaft OB. Also incl brass bow eye, oar lock holders, oar locks & drain plug fitting. Beam: 6'2", inside depth at beam 25", at bow 32". Solid core foam flotation built in along sides & bow. Trailer not incl. $3,090 ($600below list for same boat, year 2000).
GREN GARCEAU, S. Orleans, MA, (508) 2565-7706. (12)

GEAR FOR SALE

Free Bamboo Poles, suitable for canoe or kayak spars: 1pc 1-1/2"x9', 1pc 1"x9', 2pcs 1/2"x8'. **Alum Tubing,** 2pcs 1-1/8" x10' attached loosely at 1 end, possibly used for lateen rig. You pick up.
JOE ROGERS, 24 Wood Terr., Framingham, MA 01702, (508) 872-4206. (11)

Vintage Outboards, parts, controls.
ROBERT O'NEILL, Brick, NJ, (732) 477-1107 (11P)

White Polytarp Sail Kits. Construct a sail in about 4 hrs. No sewing required. 5 PolySail Kits priced from $55.95 (107sf Pram Kit) to $119.95 (568sf Schooner Kit). Shipping included.
DAVE GRAY, 7404 Madden Dr., Fishers, IN 46038, (317) 842-8106. (15P)



Famous Quotation & Illustration, from *The Wind in the Willows*. Tee $16.50, Tank $16.50, Long Sleeve $21, Sweatshirt $26, Tote Bag $16.50, Shipping $4. VISA/MC/AMEX. Other designs available.
DESIGN WORKS, Dept MC, Box 880, Silver Spring, MD 20918. (301) 589-9391, Toll Free 877-MESSING. <www.MessingAbout.com> (TFP)

Misc Gear, 20H Danforth Anchor, $60. 30' Mast Ladder, $100. Origo (new) Heat Pal, $40.
JIM TOMKINS, 2783 W. River Rd., Grand Island, NY 14072, (716) 773-5268, <jtboatwork@aol.com> (12)

British Seagull Outboard Motors: 40+SJPL #1179F4, 3hp,long shaft $150.
Silver Century Plus #WSPCL 959DD3, clutch, long shaft $450. Both $500.
KARL ARBOGAST, Dallas, PA, (570) 675-4820. (11)

GEAR WANTED

British Seagulls, dead or alive. Cash paid, any cond.
FRANK VALENTINO, S. Dennis, MA, (508) 385-8510, (508) 385-2507 anytime, email: <seagull508@aol.com> (TFP)

BOOKS & PLANS FOR SALE

BOAT PLANS-PATTERNS-KITS-Especially for amateurs, over 240 designs, you name it, we have it. Boat plan leader fro over 45 years. **NEW** year 2000 DESIGN BOOK, 216-PAGE Illustrated, new format, more photos & information, only $9.95 (Sent AIRMAIL). Includes FREE "Boatbuilding Supplies" Catalog. Epoxy manual $2.00. "How to Fiberglass" video $32.95.
GLEN-L MARINE DESIGNS, Box 1804/MAO, 9152 Rosecrans, Bellflower, CA 90707-1804. MC/VISA/DISC/AMEX 562-630-6258. **www.Glen-L.com** (TFP)

$200 Sailboat, Bolger design, 15'6"x 4'6". Plans w/compl directions. $20.
DAVE CARNELL, 322 Pages Creek Dr., Wilmington, NC 28411, <DaveCarnell@worldnet.att.net> (TF)

Skiffcycle Single, pedals like a dream. 16' 80lb plywood hull, will do 4.5mph at 50 "no hands" pedal rpm. Retractable Seacycle drive unit; seat adjusts 12" fore & aft. Prototype compl available for my $2,400 cost. Detailed D.I.Y. plans $40.
PHILIP THIEL, Naval Architect: 4720 Seventh Ave. NE, Seattle WA 98105, (206) 633-2017 (11)

Penobscot 14 Plans, by Arch Davis, incl full size patterns, illustrated building manual & choice of sailing rigs. Also incl is 2hr Penobscot 14 construction video by Arch Davis. I am not able to build & these plans have never been used. Purchaser is entitled to build 1 boat from these documents. $68 (current cost for plans & video is $119.95 plus S&H).
JOHN A. THORPE, 2226 NW Lee Ave., Lincoln City, OR 97367, (541) 996-4527), <jthorpe@wcn.net> (11)

Row to Alaska by Wind & Oar, new book about adventure of retired couple rowing up Inside Passage to Alaska. Reviewed in March 15, 1995 issue. $12 postpaid.
NANCY ASHENFELTER, 3915 "N" Ave., Anacortes, WA 98221 (TF)

A $400 Touring Kayak for $85! Yes. New building method is quick, easy and cost slashing. 3 short weekends get you a 39lb Li'l Beauty, 2-person fishing, camping, exploring kayak. $16 for complete building manual or photo brochure $2.
HOBBYCRAFT KAYAKS, 1178 Laurel Fork Rd., Vilas, NC 28692 (TFP)

Unbought & Unbossed, friendly candid publishing on modern folkways & cultural revival. Inside info for readers who've been there, done that. Emphasizing a DIY approach to bikes, boats, guns, movies, music, religion. $5 for new issue plus catalog.
OutYourBackdoor.com, 4686 Meridian, Williamston, MI 48895. (TF)

"Sleeper," 7'10" car toppable sailing cruiser. Slps 2 below deck. Plans $37, info $3.
EPOCH PRESS, P.O. Box 3047, San Rafael, CA 94912 (TFP)

From My Old Boat Shop, Weston Farmer's great book republished with added Farmer material. $49.95 + $3 S&H, or send SASE for descriptive bulletin.
WESTON FARMER ASSOCIATES, 18972 Azure Rd., Wayzata, MN 55391 (TF)

"Big Boat Books": *The Finely Fitted Yacht, From a Bare Hull & Best Boats to Build or Buy*, by Ferenc Mate, $12 ea. *Sensible Cruising Designs* by L. Francis Herreshoff, $10. *Blueberry* by David Hume, $10. *Voyaging on a Small Income* by Annie Hill, $10. *Boat Joinery & Cabinetmaking Simplified* by Fred Bingham, $11. *The Sailor's Sketchbook* by Bruce Bingham, $10. *Thirty Wooden Boats* by *WoodenBoat*, $5. *Cruising Sailboat Kinetics* by Danny Greene, $12. *The Catboat Book* by The Catboat Association, $8.
LARRY APPLEBAUM, St. Louis, MO, (314) 544-2865. (12)

Dory Plans, row, power & sail. 30 designs 8'-30'. Send $3 for study packet.
DOWN EAST DORIES, Dept. MB, Pleasant Beach Rd., S. Thomaston, ME 04858. (TF)

BOOKS & PLANS WANTED

Various Books: Culler's *Boats, Oars & Rowing*; *The Shoe & Canoe* by Bigsby; *Trail of the Red Canoe* by M. Govan ('54 juvenile); any early Peterborough canoe history; any other early canoe/kayak titles. Please send details incl price required (surface mail to UK).
CAROL DAVIS, Devon, England, <dddesigns@mailcity.com> (11)

Old Canoe Catalogs.
LEROY SAYERS, P.O. Box 386, Smyrna, DE 19977, (302) 653-2628, (302) 653-9487. (TFP)

Original Plans & Photos, of the Home Maid sailboat offered yrs ago by IABBS. Will pay for same.
JIM BETTS, P.O. Box 1309, Point Pleasant Beach, NJ 08742, (732) 295-8258, <pointpubco@aol.com> (11)

MARINE RELATED ITEMS FOR SALE

Free Acrylic Painting of Your Boat, will still do free picture painting of your boat but $50 for 9"x 12" & $100 for 18"x 24" will get your painting done first. Send no money until you get a painting you like.
SAM CHAPIN, 753 Woodside Rd., Maitland, FL 32751, (407) 622-5730. (TF)

Tall Ship Dream Cruise, on wooden schooner *Liberty Clipper* in October. 2000. Help sail & learmn or lie back & relax. Incl everything except drinks. Illness prevents my sailing. Cost $5,000, asking $3,500 OBO.
R.H. DALTON 524 Grinnell St., Key West, FL 33040, (305) 296-5490. (11)

Cruise the Hidden Waterways of Europe, our 5th year. Send SASE for information.
GLENN GOLTZ, 4240 Arguello St., San Diego, CA 92103. (11)

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